Leadership Seminar

Neuroleadership: An Introduction to Cognitive Bias

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Objectives

- Understand brain function and development and its implications for thinking, feeling and judging in everyday situations.

- Identify common "bugs" in our thinking patterns that lead to inaccurate judgments and decisions.

- Identify measures that can be used to mitigate the use of unproductive thinking patterns when appropriate.

Human Brain

Neocortex
Higher-order thinking

Limbic brain
Emotions

Brain stem
Survival

Brain Stem (Avoiding Harm)

- Survival functions
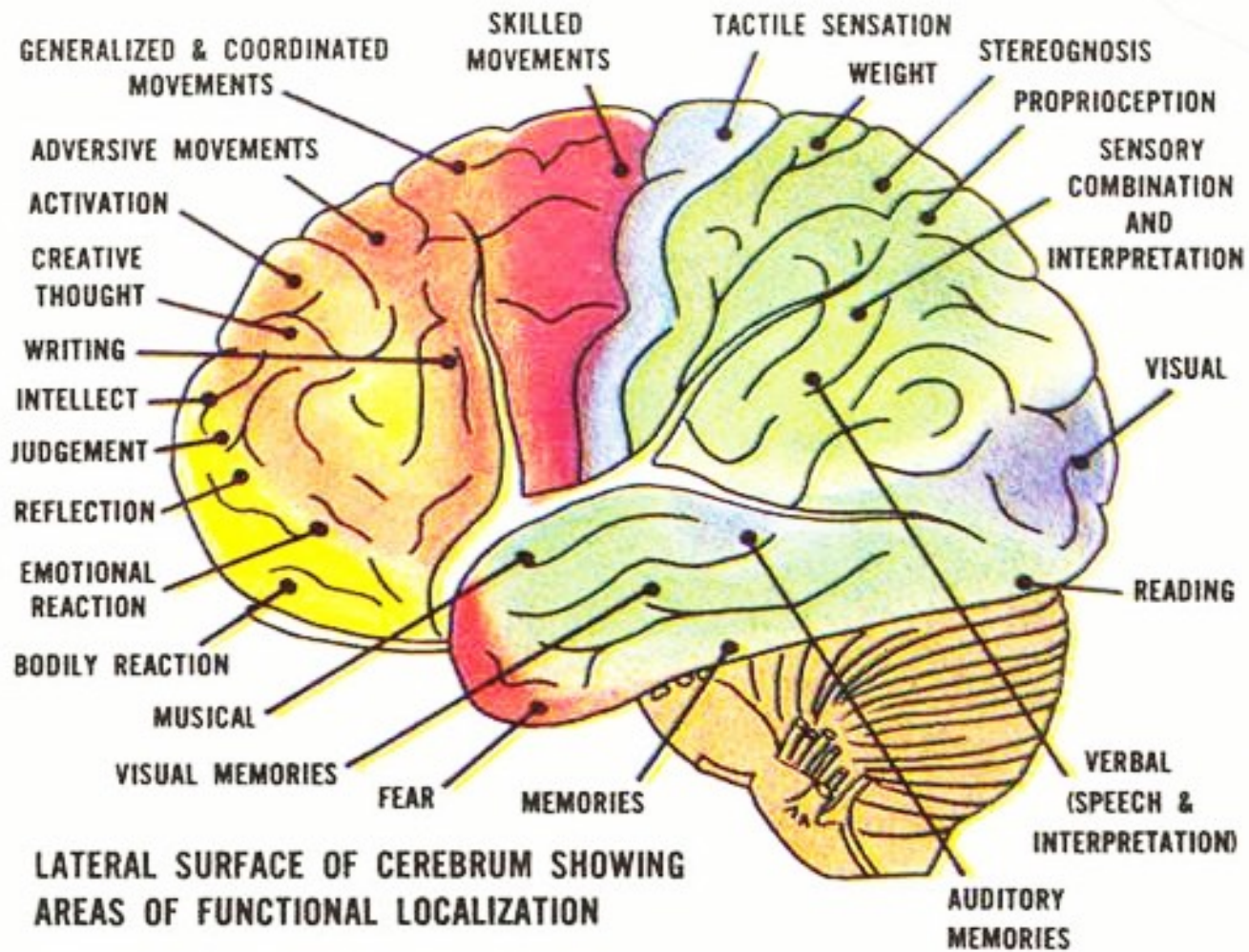- Energizes and guides behavior
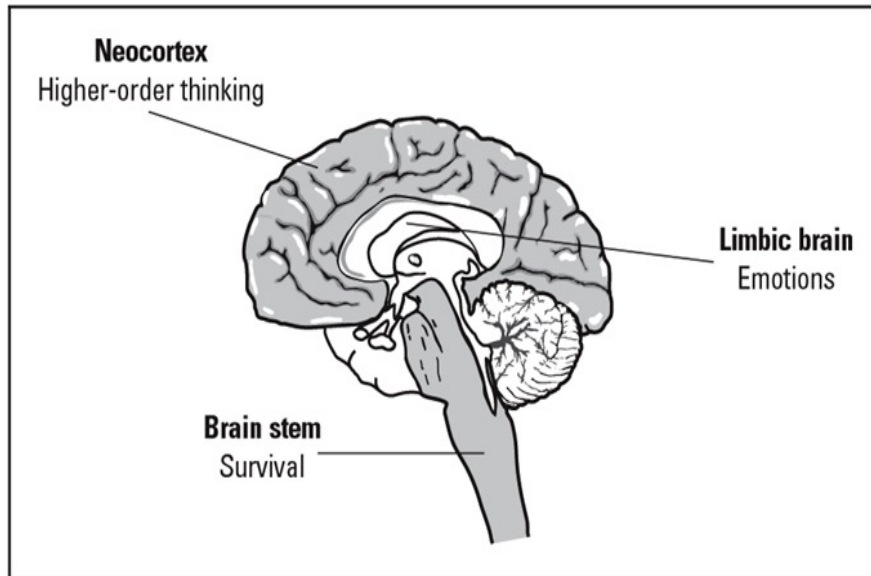
Sub Cortex (Approaching Rewards)

- Middle of head
- Center of emotions, motivation and primitive bonding

Cortex (Positive attachment)

- Outer shell
- Abstract reasoning
- Reflecting about past and future
- Key social abilities such as empathy, language and cooperative planning
- Integration of experience, reflection

Human Brain

GENERALIZED & COORDINATED MOVEMENTS
ADVERSIVE MOVEMENTS
ACTIVATION
CREATIVE THOUGHT
WRITING
INTELLECT
JUDGEMENT
REFLECTION
EMOTIONAL REACTION
BODILY REACTION
MUSICAL
VISUAL MEMORIES
FEAR
MEMORIES

SKILLED MOVEMENTS
TACTILE SENSATION
WEIGHT
STEREOGNOSIS
PROPRIOCEPTION
SENSORY COMBINATION AND INTERPRETATION
VISUAL
READING
VERBAL (SPEECH & INTERPRETATION)
AUDITORY MEMORIES

LATERAL SURFACE OF CEREBRUM SHOWING AREAS OF FUNCTIONAL LOCALIZATION
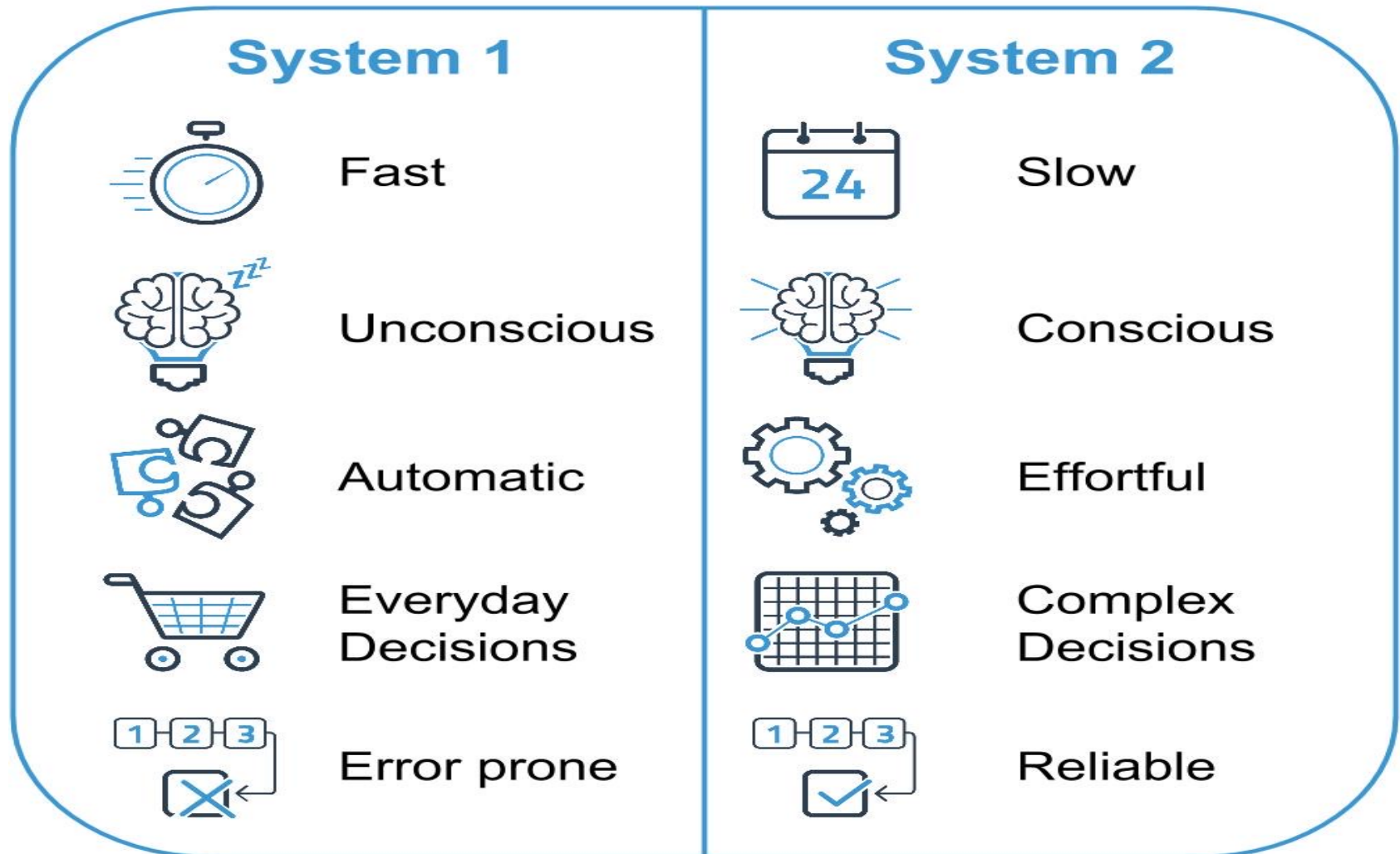
Brain Development

- **Pre-frontal cortex does not begin to "kick in" until we are about 18 months old**
    - Until then we are operating for the most part on mid and lower brain functions
    - Language is key
    - Before 18 months we have only "implicit memory" for how things feel to us—mostly derived from the people around us, how they act, what they like or dislike and their anxiety
    - At 18-24 months we begin to see ourselves as separate and able to impact the world
- Pre-frontal lobe is not fully developed until we are well into our 20s
    - Until then, much of our thought and action is "mimic" and designed to avoid punishment or gain reward
    - At this time we can operate, with intent, in higher levels of reasoning

Thinking Systems

System 1: Fast, intuitive and emotional. Little or no effort. Share this system with most other creatives on the planet. We are born equipped for this system. Usually easy, feels good. Operates all of the time in the background and alerts System 2 when it is needed. **CANNOT BE TURNED OFF.**

System 2: Slower, more deliberate and logical. Allocate attention to effortful mental activities including complex judgment and calculations. Associated with agency, choice and concentration. Probably more evolved than many other creatures. More work, more difficult. **EASILY DISTRACTED. SUBJECT TO WILLPOWER AND ENDURANCE.**
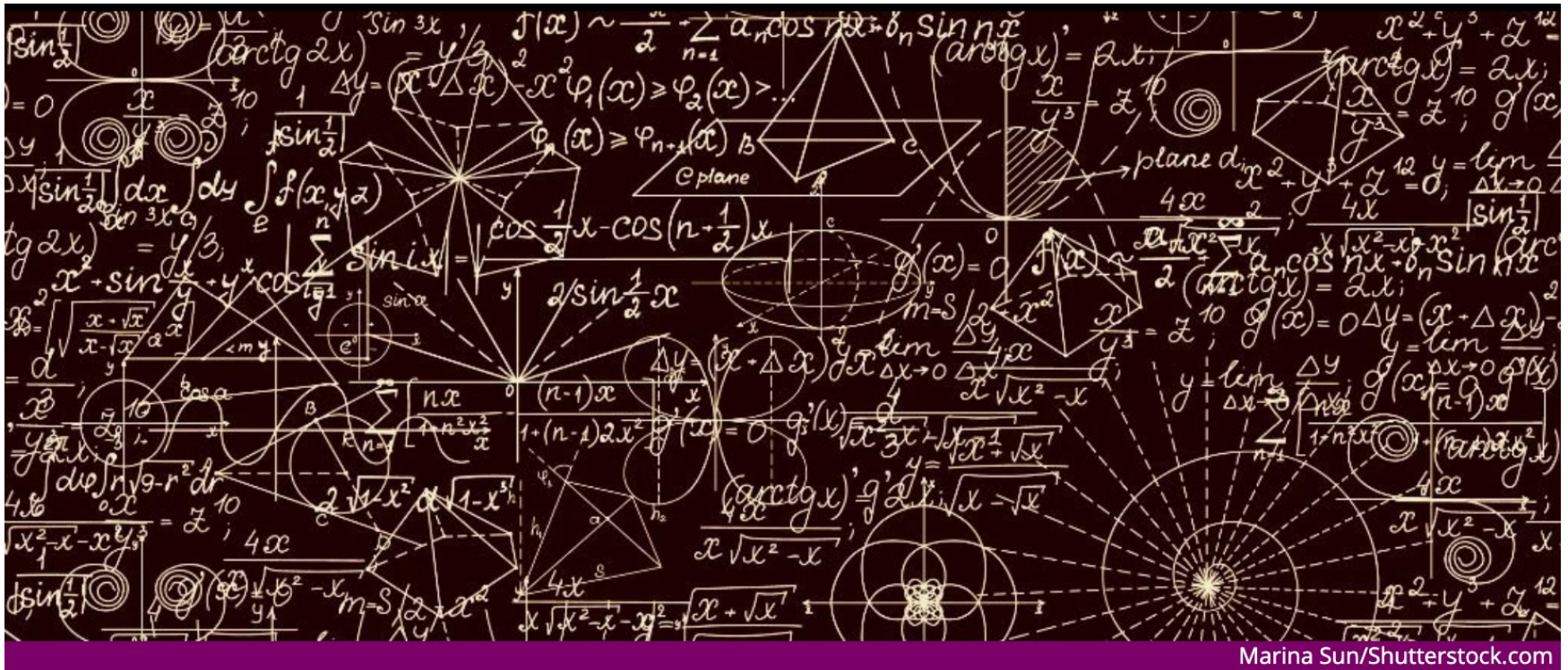
Thinking Systems

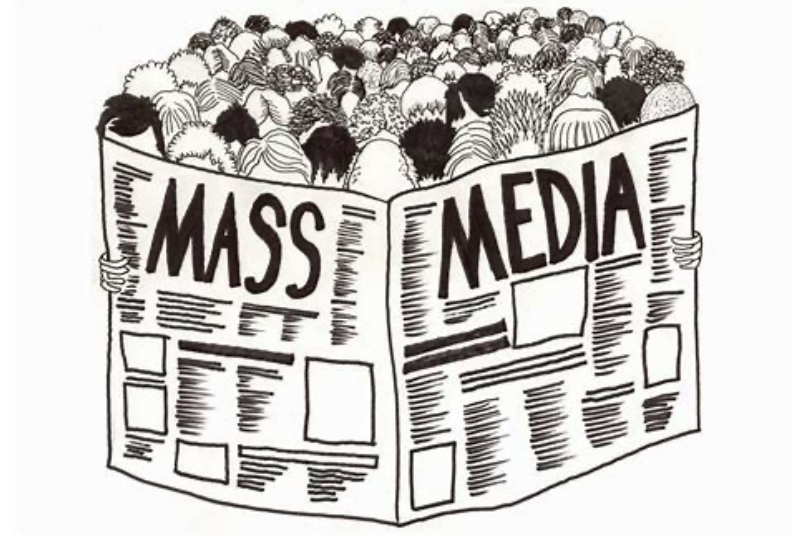| System 1	System 2
Fast	Slow
Unconscious	Conscious
Automatic	Effortful
Everyday Decisions	Complex Decisions
Error prone	Reliable

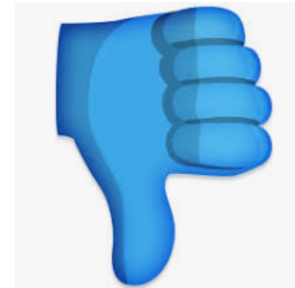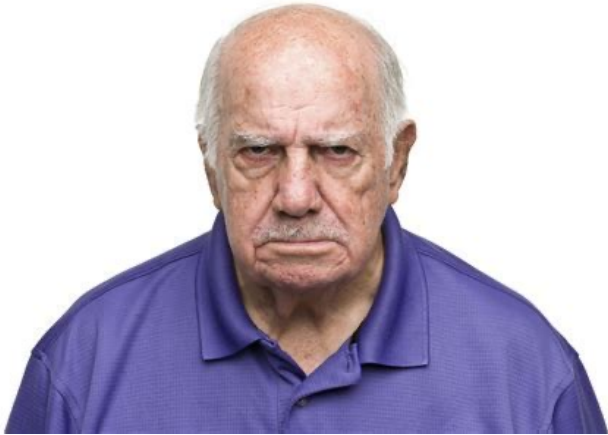# Thinking System One

Thinking System Two

Marina Sun/Shutterstock.com

System One Develops From..

Thinking Systems Miscues

System One vs. System Two

System 1
"Fast"

DEFINING CHARACTERISTICS
Unconscious
Effortless
Automatic

WITHOUT self-awareness or control

"What you see is all there is."

ROLE
Assesses the situation
Delivers updates

System 2
"Slow"

DEFINING CHARACTERISTICS
Deliberate and conscious
Effortful
Controlled mental process

WITH self-awareness or control

Logical and skeptical

ROLE
Seeks new/missing information
Makes decisions

Source: Young, Charles, *Can Behavioral Economics Inform the Ad Research Process,* January 2014.

System One and Two Activity

In groups of five, discuss the following:

- In what ways do we use System 1 and System 2 thinking in the workplace? What are the pros and cons?

- Can you think of times when we should use one instead of the other?

You will have 10 minutes in your group.

Activity Debrief

What are some of the ideas you discussed in your groups?

The Problem

Why don't we just use System 2 all the time?

Break

System 1 and System 2 as a Team

The division of labor between System 1 and System 2 is highly efficient: it minimizes effort and optimizes performance....AND
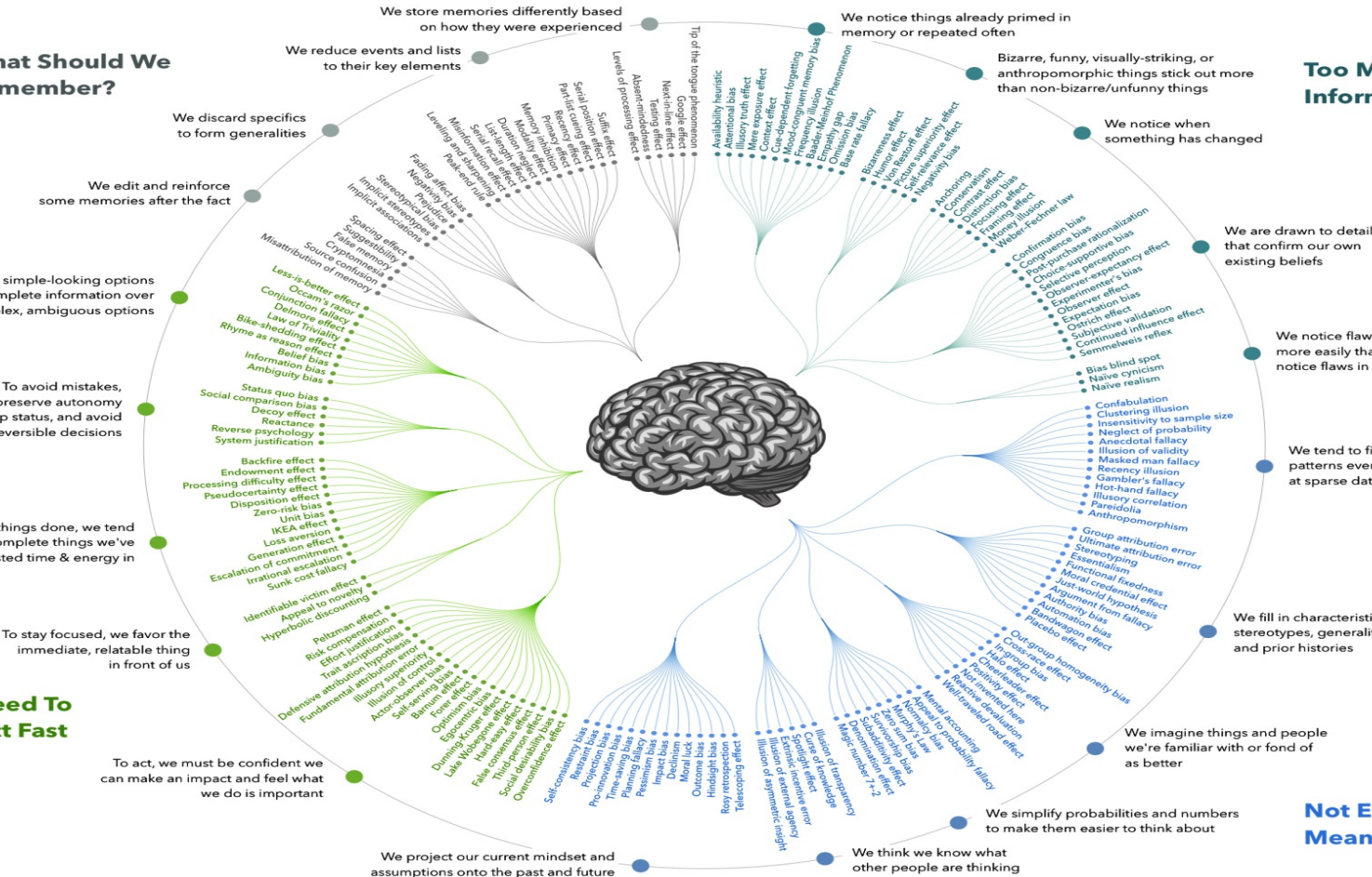
System 1 has errors that is prone to make in certain circumstances which leads to...

Source: Kahneman, Daniel, https://www.scientificamerican.com/article/kahneman-excerpt-thinking-fast-and-slow/

Cognitive Bias

A cognitive bias is a tendency to make repeated and similar mistakes in thinking. Unlike random errors, which have no pattern, these mistakes are systematically wrong in one direction. They usually arise from simple rules-of-thumb, or heuristics, which the mind uses to help it to perform a task more easily.
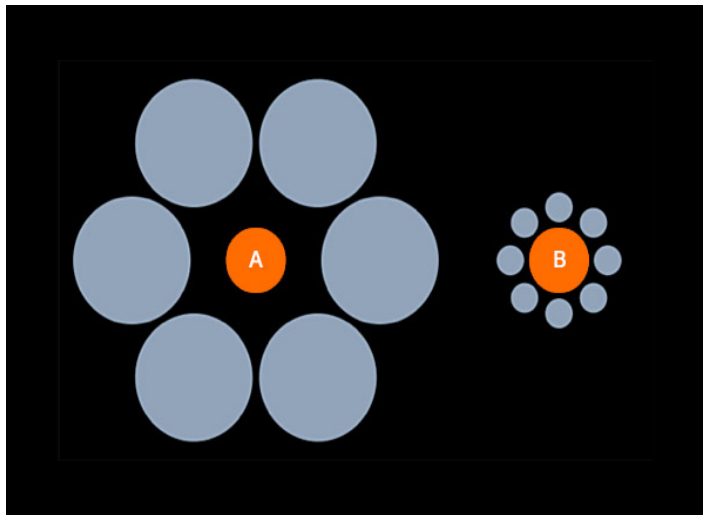
As an example, the diagram illustrates the *Ebbinghaus Illusion* – the orange circle on the right (B) appears, to most people, larger than the orange circle on the left (A). In fact, they are the same size. The heuristic involved here is to take the context into account, when estimating the size of things. The bias is to usually overestimate the size of objects, when smaller ones surround them – and underestimate the size of objects surrounded by larger ones

Thinking Traps

COGNITIVE BIAS CODEX

What Should We Remember?

We store memories differently based on how they were experienced

We reduce events and lists to their key elements

We discard specifics to form generalities

We edit and reinforce some memories after the fact

We favor simple-looking options and complete information over complex, ambiguous options

To avoid mistakes, we aim to preserve autonomy and group status, and avoid irreversible decisions

To get things done, we tend to complete things we've invested time & energy in

To stay focused, we favor the immediate, relatable thing in front of us

Need To Act Fast

To act, we must be confident we can make an impact and feel what we do is important

We project our current mindset and assumptions onto the past and future

We notice things already primed in memory or repeated often

Bizarre, funny, visually-striking, or anthropomorphic things stick out more than non-bizarre/unfunny things

Too Much Information

We notice when something has changed

We are drawn to details that confirm our own existing beliefs

We notice flaws in others more easily than than we notice flaws in ourselves

We tend to find stories and patterns even when looking at sparse data

We fill in characteristics from stereotypes, generalities, and prior histories

We imagine things and people we're familiar with or fond of as better

Not Enough Meaning

We simplify probabilities and numbers to make them easier to think about

We think we know what other people are thinking

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Cognitive Bias Cheat Sheet

System One Thinking "Traps"

- Law of Small Numbers
  - Characteristics of a sample population can be estimated from a small number of data points or observations.

- Anchoring
  - Rely too heavily on the first piece of information when making decisions. We can "prime" judgments this way.

- Availability
  - Overestimate frequency of events based on a memorable or dramatic occurrence.

- Representativeness
  - Taking a few traits and overgeneralizing into a stereotype.

- Primacy and Recency
  - Tendency to recall items at the beginning or end of a list or sequence or event.

- Confirmation bias
  - Tendency to look for confirming evidence

Thinking Traps Activity: Implications and Mitigation

In your teams:

1. Identify common examples of thinking traps in leadership situations and the implications for leadership/judgment/decision making

2. What are some mitigation strategies for overcoming these thinking traps?

You will have 20 minutes

Activity Debrief

1. What are some common thinking traps you discussed?

2. Did you have ideas about mitigation strategies?

Mitigation Strategies

- Keep yourself in a "responsive" or "generative" mode.

- Take "extraordinary" measures when you know there is/has been systematic bias.

- For strategic decisions have a group of diverse thinkers take the "opposite" position.

- Actively check for cognitive bias—consider having a person be the "bias" monitor.

- Create a list of your most common cognitive bias and check them when making a decision.

- Give yourself a check list:
  - What could be another approach to a problem?
  - What are the upsides and downsides of each approach?
  - What are risks? Rewards?

Metacognition

Definitions:

1. Thinking about thinking

2. Processes used to plan, monitor, and assess one's understanding and performance

Relates to **Learning Style:** Auditory, Visual, Tactile

What are other examples of **metacognition** and how does this relate to **cognitive bias**?

Reflection

Break

Questions and Remarks