

Teaching Sound
Diagnostic Reasoning
A Cognitively-Based 6-Step Approach

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Goal: Improve Our Teaching

- Objectives:
- Differentiate between intuitive and analytic reasoning
- Recognize common cognitive biases that affect diagnostic reasoning in self, trainees & students
- Employ 6 steps to help teach sound diagnostic reasoning

You will see an image
Shout out the answer as quickly as you can



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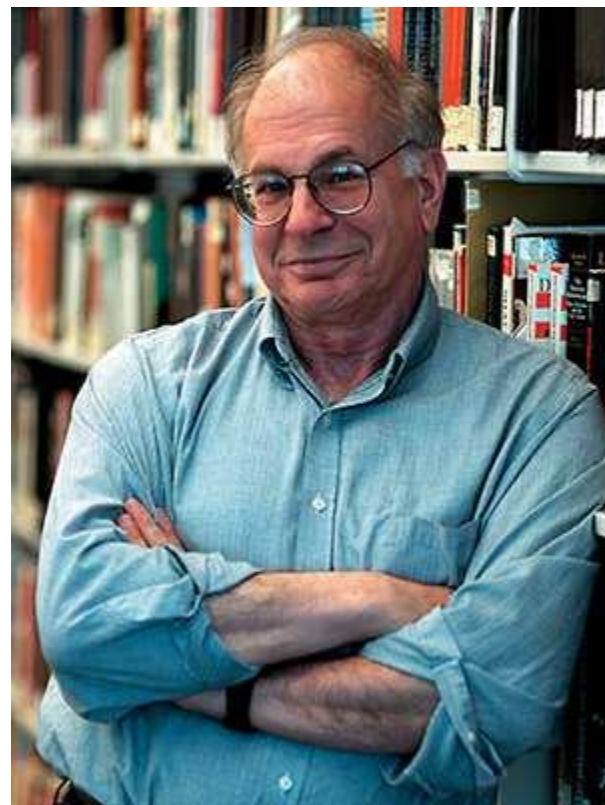
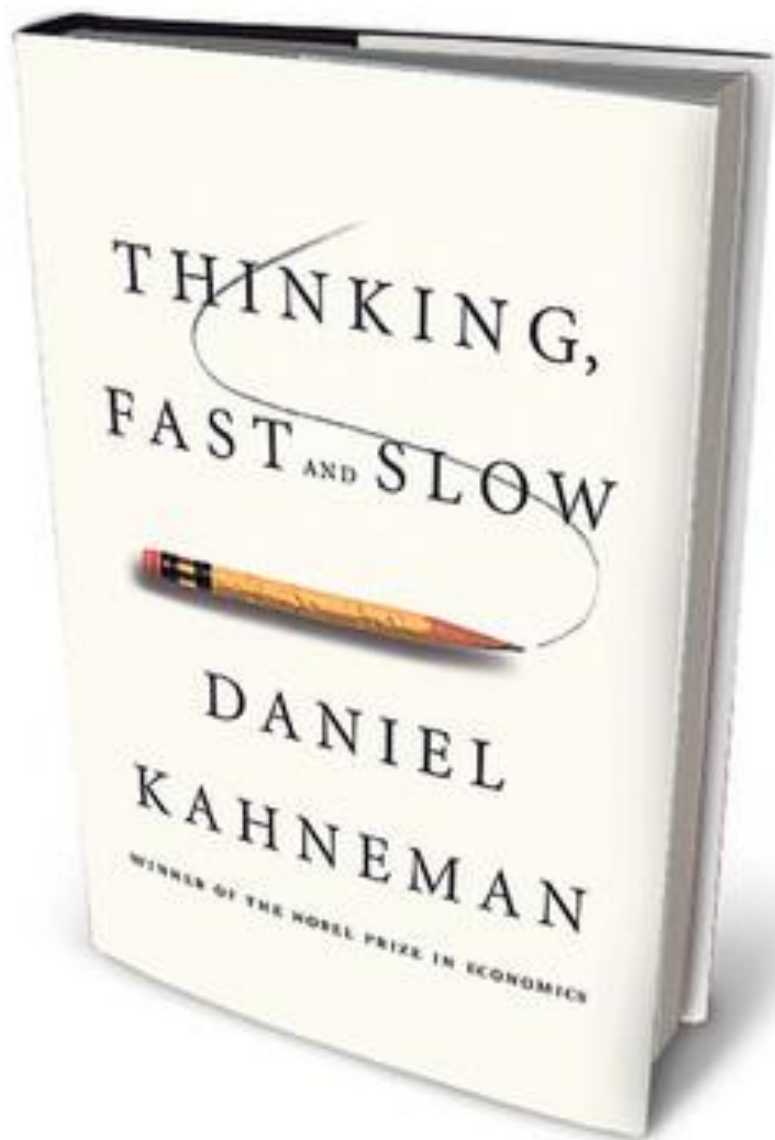
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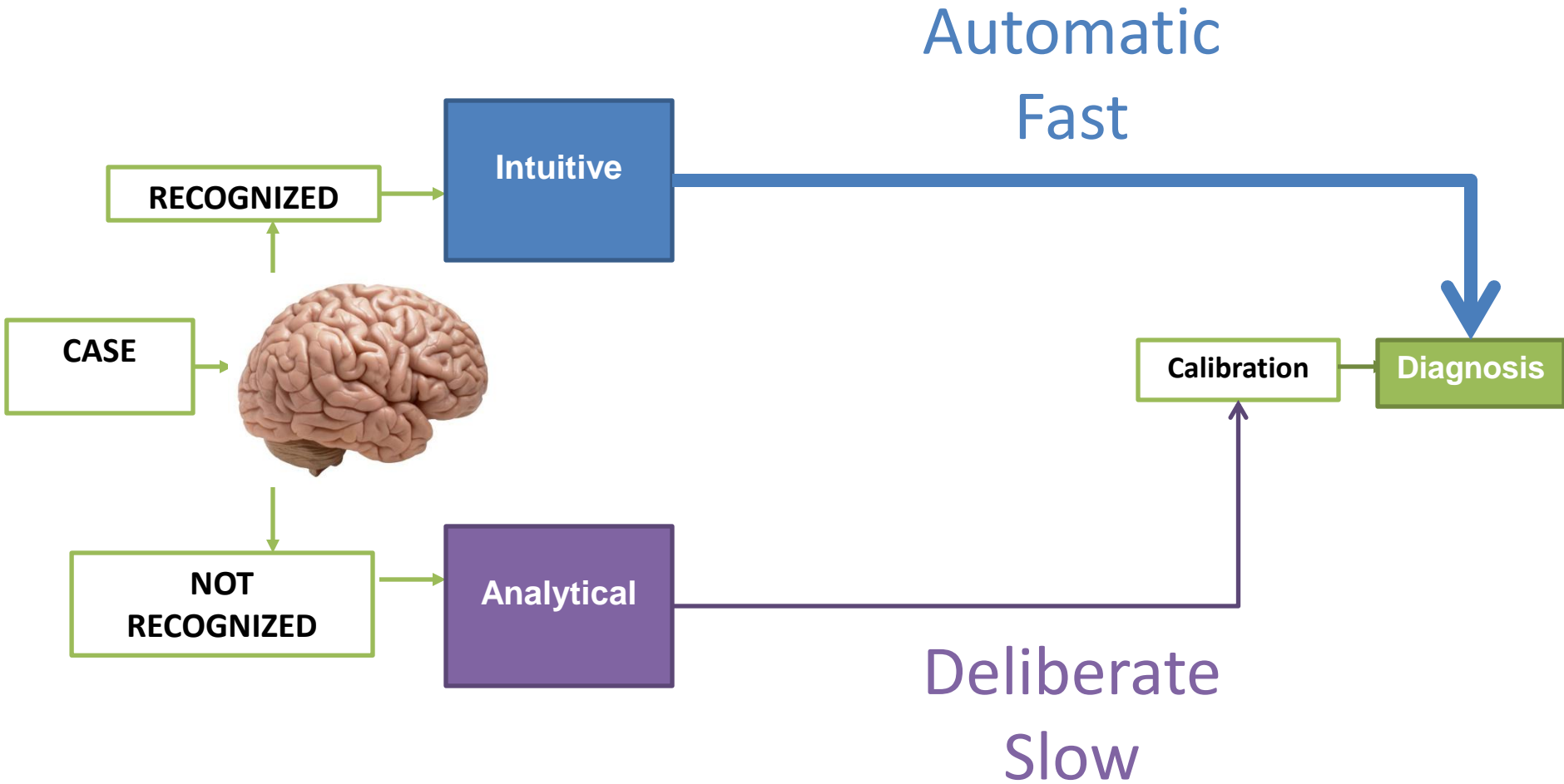
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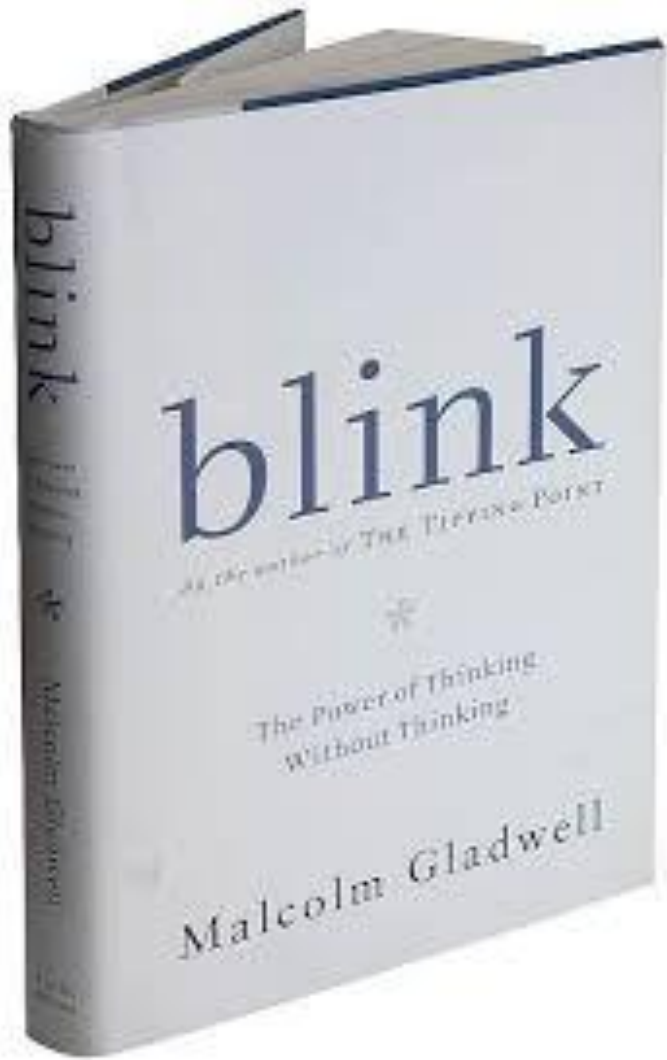
ONE DOLLAR





Dual-Process Theory of Cognition





Let's Think About Intuitive Reasoning!

- Turn to your neighbor & discuss
- Think about diagnosis made confidently & immediately
- What factors were at play?

Heuristics & Biases

- Heuristics
 - Cognitive short-cuts or rules of thumb
 - Evolutionarily adaptive
 - Often accurate, but contextually-dependent
- Bias = inappropriately applied heuristic

Heuristics & Biases

Availability

Representativeness

Anchoring

Affective



Availability Heuristic

- Diagnosis considered more likely if more easily retrievable from memory
- “Looking for zebras”



Representativeness Heuristic

- Diagnosis considered more likely if similar to previous cases
- “Missing zebras or atypical cases”



Anchoring Heuristic

- Initial information influences subsequent reasoning & decisions
- Framing effect
- Premature closure



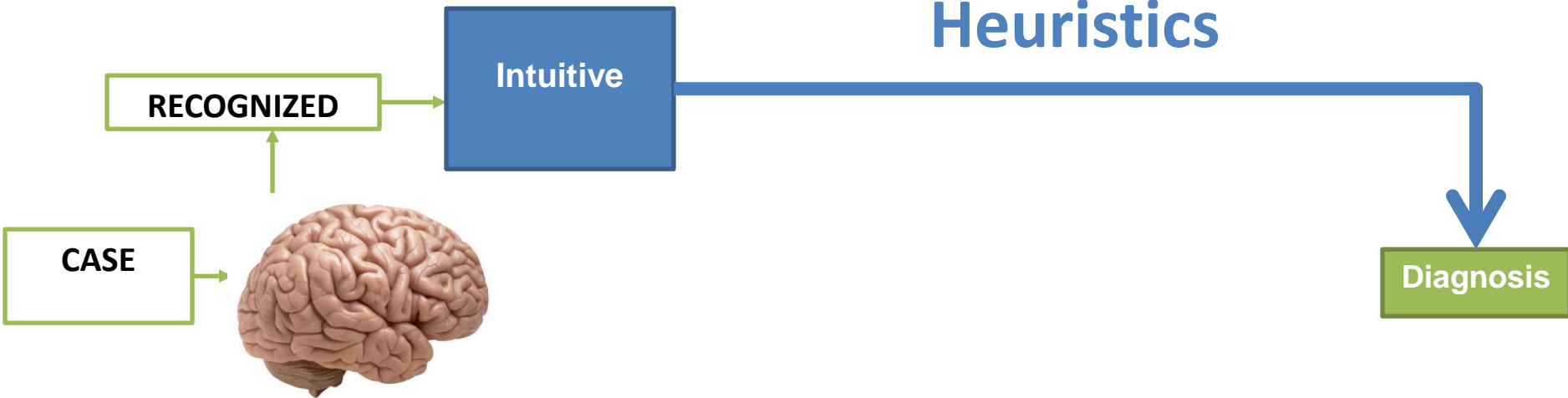
Affective Heuristic

- Diagnosis considered more likely because of “gut response”
- Can be influenced by:
 - Patient
 - Family
 - Stress
 - Hunger
 - Sleep deprivation

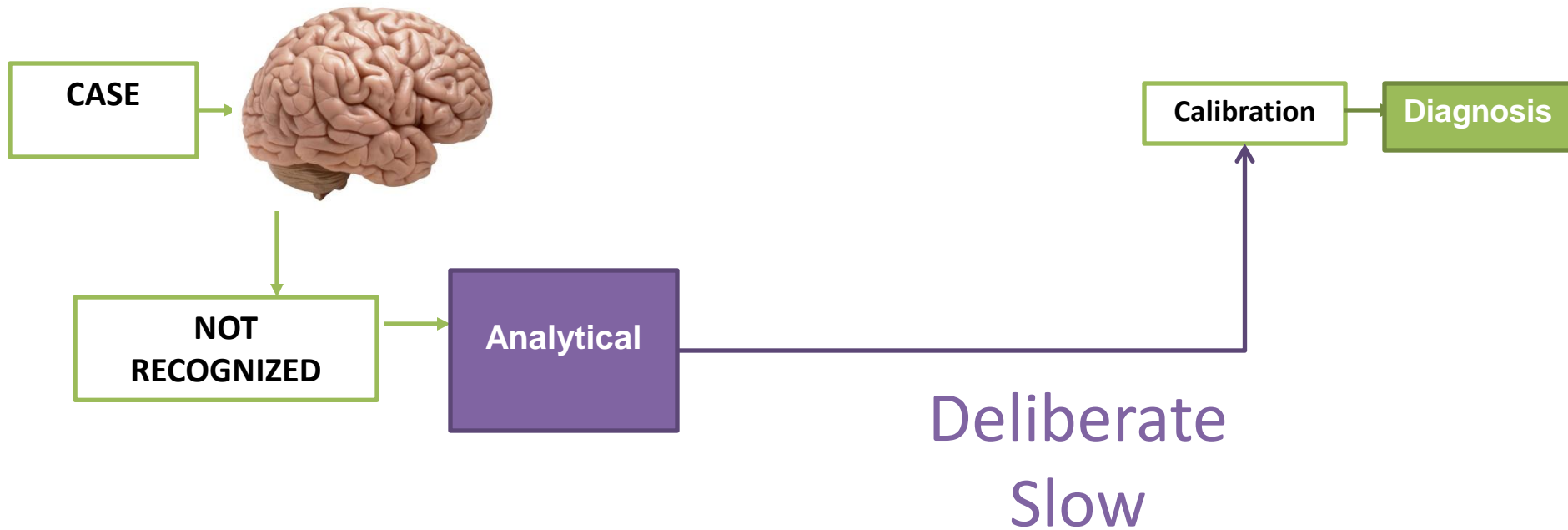


Highlighting Intuitive Reasoning

Automatic & Fast
Heuristics



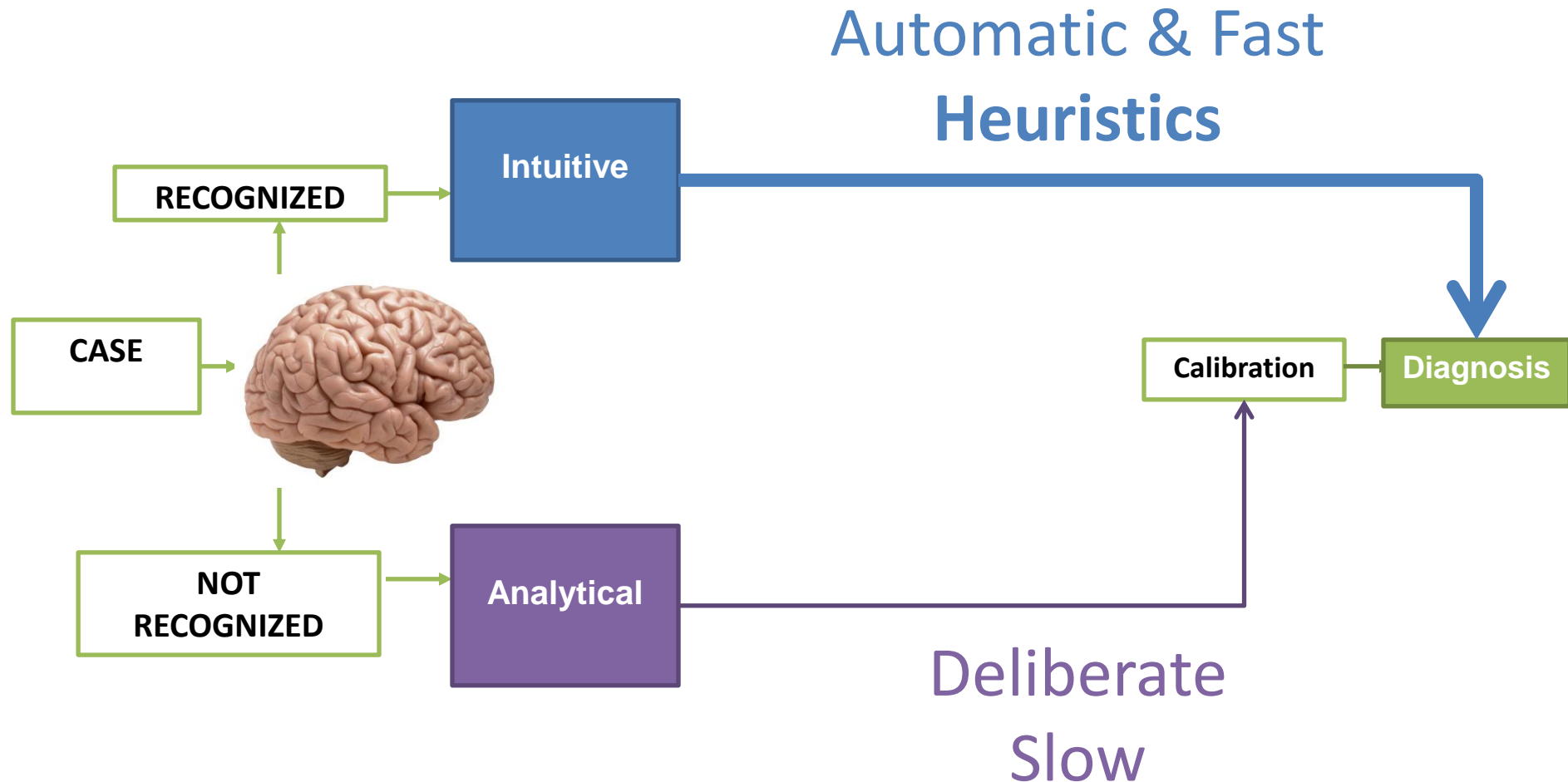
Highlighting Analytical Reasoning



Pitfalls of Analytic Reasoning

- Slow
- Labor-intensive
- Inefficient
- “Missing the forest for the trees”

Dual-Process Theory of Cognition



Comparison



Novice



Expert



Six Steps to Help Teach Sound Diagnostic Reasoning

Step 1 – Engage Intuitive Reasoning

- “What is your leading diagnosis?”
- “Give me a top 3-5 differential diagnosis?”

Step 2 – Confirm Accurate Intuitive Reasoning

- “Why does your diagnosis fit?”
- “Why do you think that’s correct?”

Video



Step 3 – Engage Analytic Reasoning

- “Let’s take a time out.”
- “What doesn’t fit?”
- “Let’s start with a blank slate.”
- “What if...?”

Step 4 – Stuck? Build on Prior Knowledge

- “Tell me about other patients that you’ve seen like this before.”
- “Tell me what you have been taught/learned before about this.”

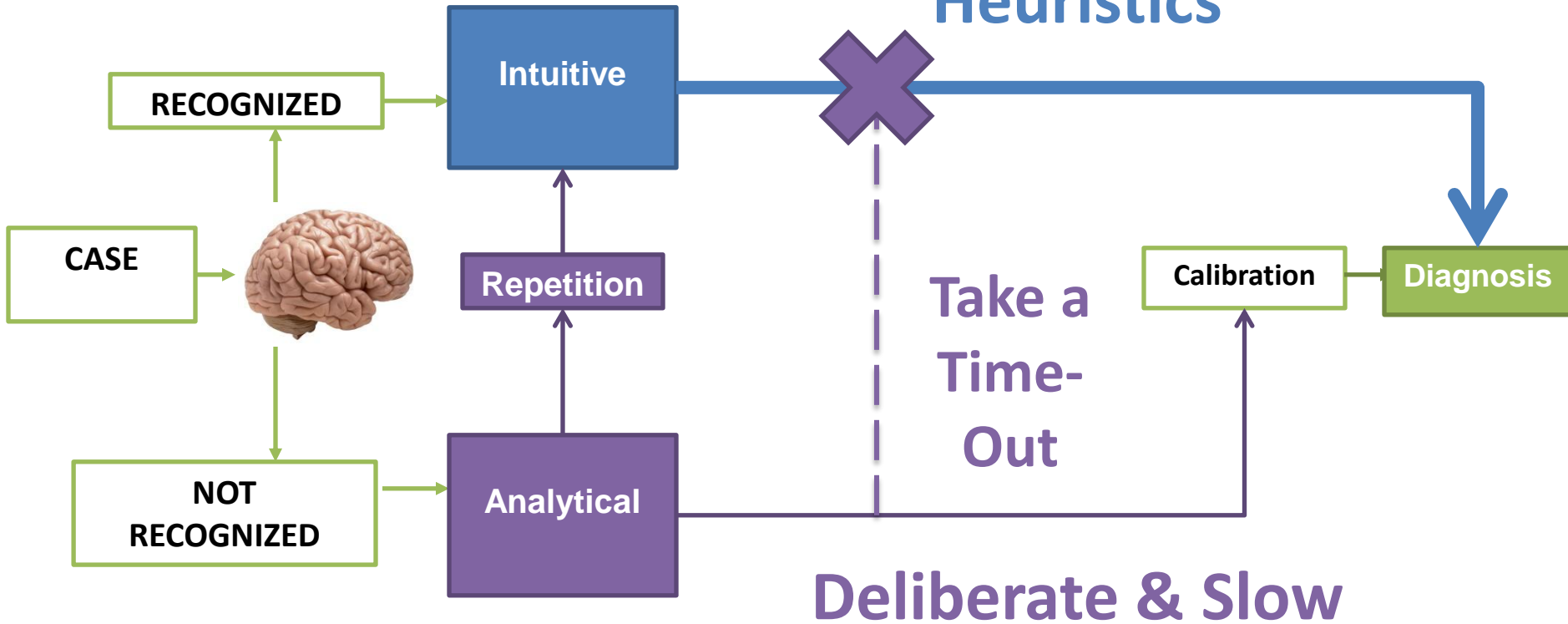
Step 5 – Promote Self-Directed Learning

- “What else do you need to learn about this?”
- “What is the evidence? How does it apply?”

Step 6 – Provide Feedback & Think Aloud

- Name it as feedback!
- Highlight what was done well and why
- Explain your thinking process, if needed
- Discuss what may be helpful for future situations
 - When heuristics are being used
 - Potential for bias

Automatic & Fast
Heuristics



Engaging both types of reasoning is important

Teaching Sound Diagnostic Reasoning

- Engage intuitive reasoning
- Confirm accurate intuitive reasoning
- Engage analytic reasoning – take a time out!
- Stuck? Build on prior knowledge
- Promote self-directed learning
- Provide feedback & think aloud

Questions, Feedback or Comment?
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