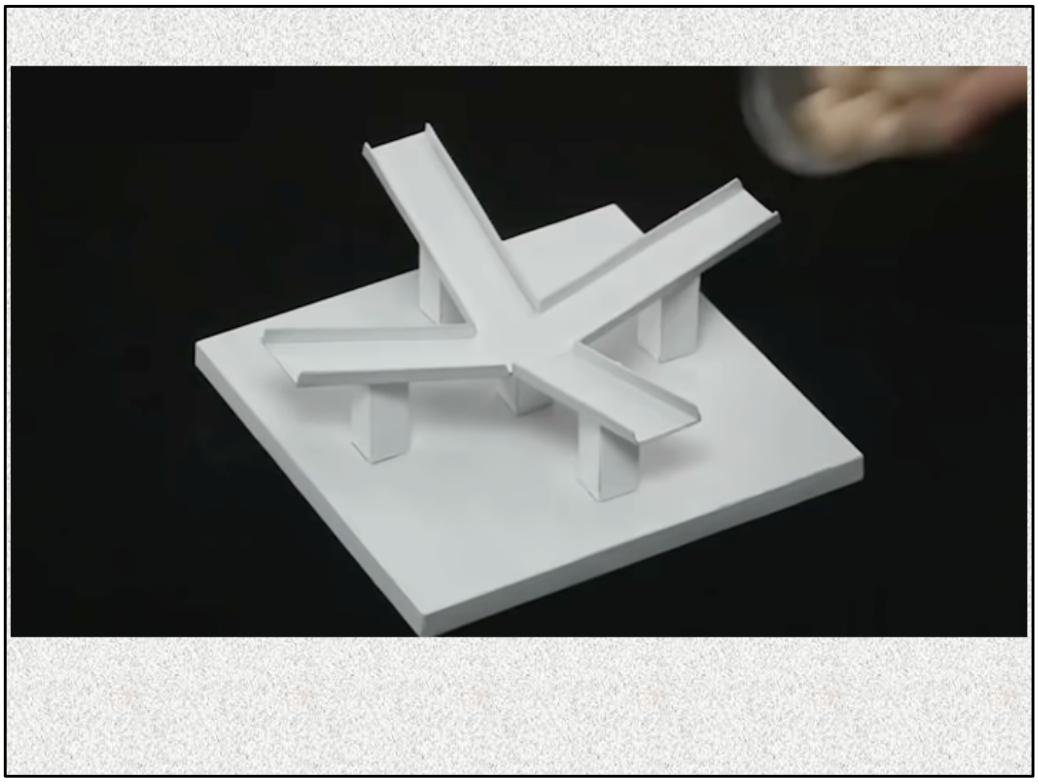

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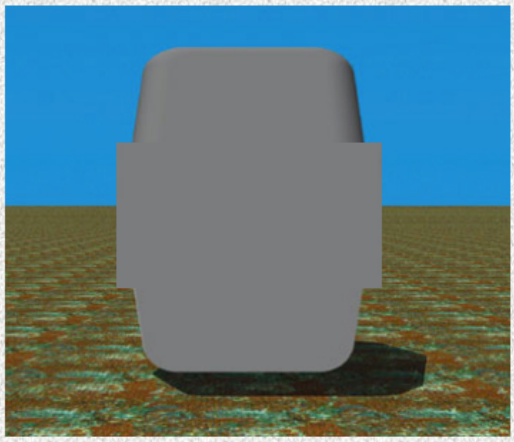
Decision-Making: Errors of Perception



(Which lozenge is darker?)

Gates Richards, M.Ed., WEMT-I, FAWM
Special Programs Manager
NOLS Wilderness Medicine

Who am I?

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Mindful Practice

- The ability to purposefully observe ourselves in the midst of the complexity and chaos of the moment.
- The presence of mind to be open, curious, flexible and present when faced with anxiety, uncertainty and chaos.

The goal of this presentation is to explore one category of decision-making errors in order to move ourselves toward being mindful practitioners.

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Decision-Making Models

- Rules of Thumb (Heuristics)
- Analysis
- Random Choice
- Expertise

4 commonly used models

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Human Hazards

- Errors of Skill
- Errors of Thought
- Errors of Perception

3 categories of errors:

1. Errors of skill
    1. incomplete/inadequate skill or knowledge
    2. Miscommunication
    3. Wicked v kind environments
2. Errors of Thought
    1. Illusion of knowledge
    2. Biases: confirmation, selection
    3. Emotional hooks
3. Errors of Perception
    1. This is where we'll focus today

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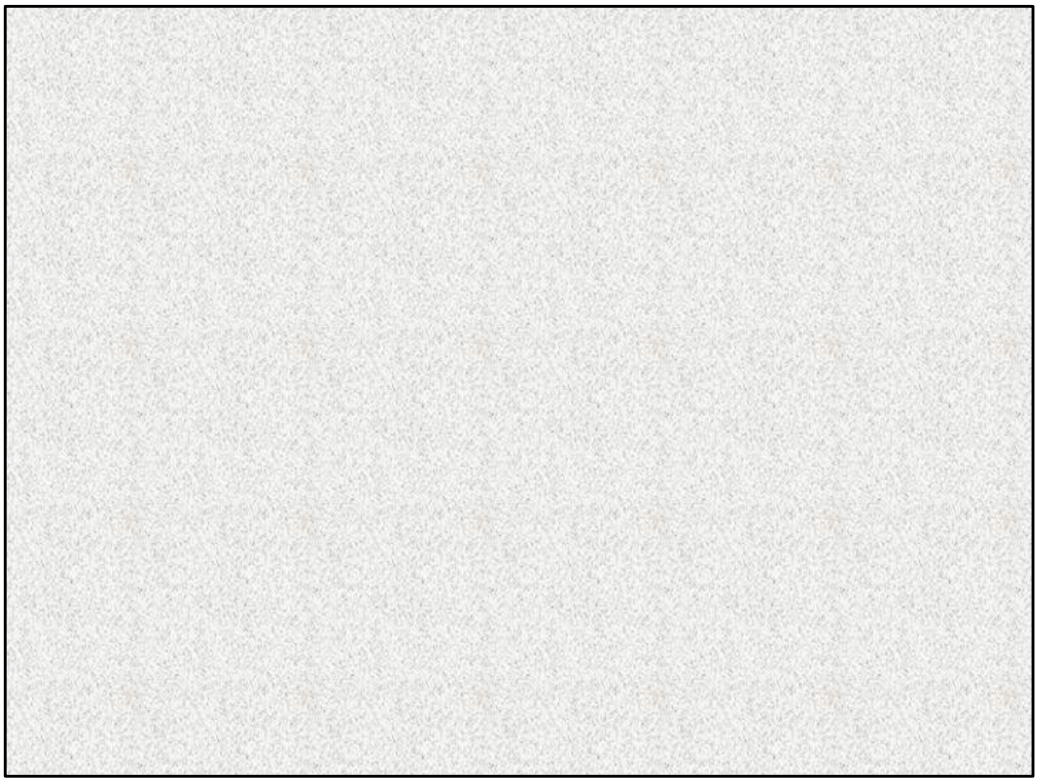

Let's start with a game:
It's like 3 card monte – follow the water cup

Water cup trick

Human Hazards

- Errors of Perception

- Illusion of Attention

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Human Hazards

- Errors of Perception

- Change Blindness

Frist video is Flicker or Mudsplash effect – visual field is broken momentarily creating missed info
Second is Gradual Change – so slow, brain doesn't recognize it

Ok – I promised some magic, so here goes
I'm going to show a slide of several cards, pick one, memorize it, but tell no one

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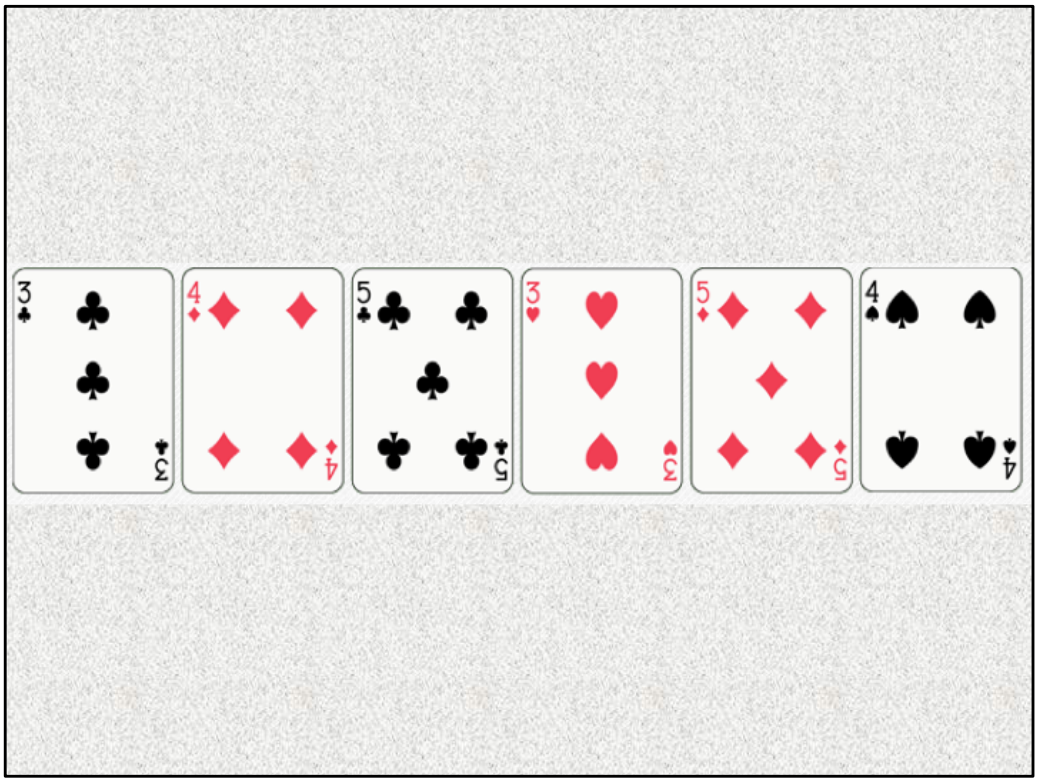

Blank screen

Concentrate on sending it to me – project the image of your card on my brain

I’m gonna remove it from the next slide…

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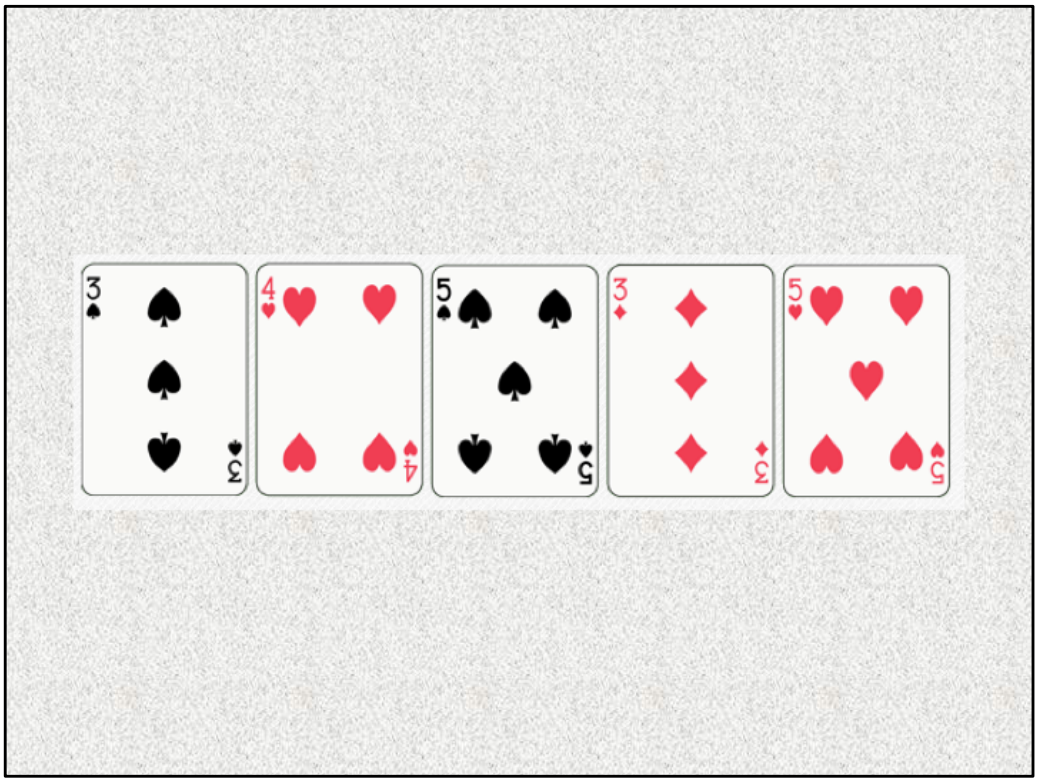

It's gone!

What, How?

Again – when you focus on one thing, you lose the periphery—

Quick survey from crowd what card. How did I make them all disappear?... Ah!

Now do Thumb Magic

About attention – where it is, how it works
Not misdirection, awareness

Brain likes to fill gaps with what is most likely – do thumb magic
Most folks have seen pattern of stage 1 thumb magic
Stage two takes a few moments as brain goes through options and struggles a bit
Stage 3 works because brain doesn't know where the arc will go, so it follows it and misses other nearby action

Do orange toss magic -

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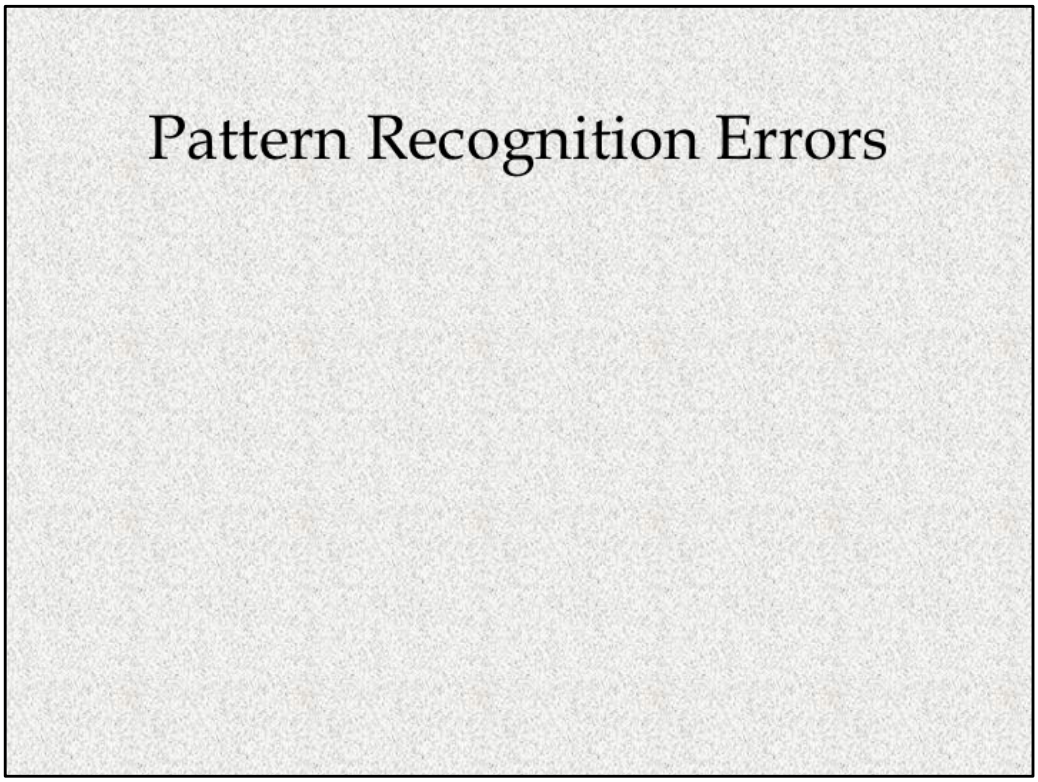
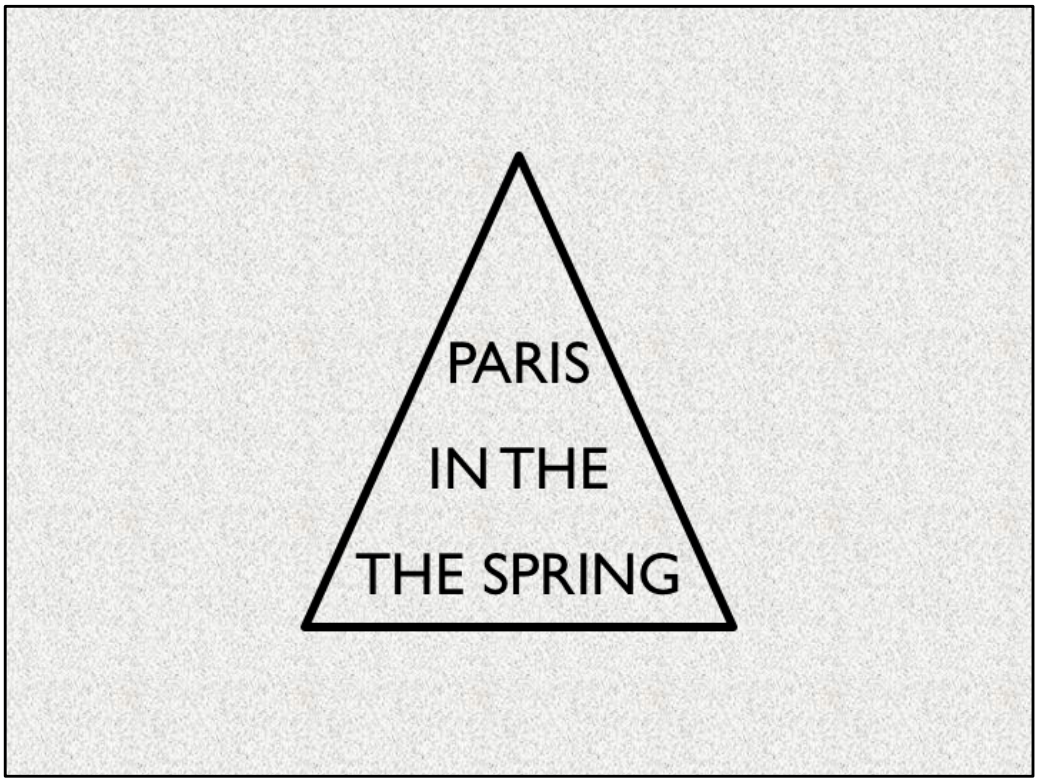


Grab a piece of paper. I'll flash a screen for about 5 seconds. Write down what you see.



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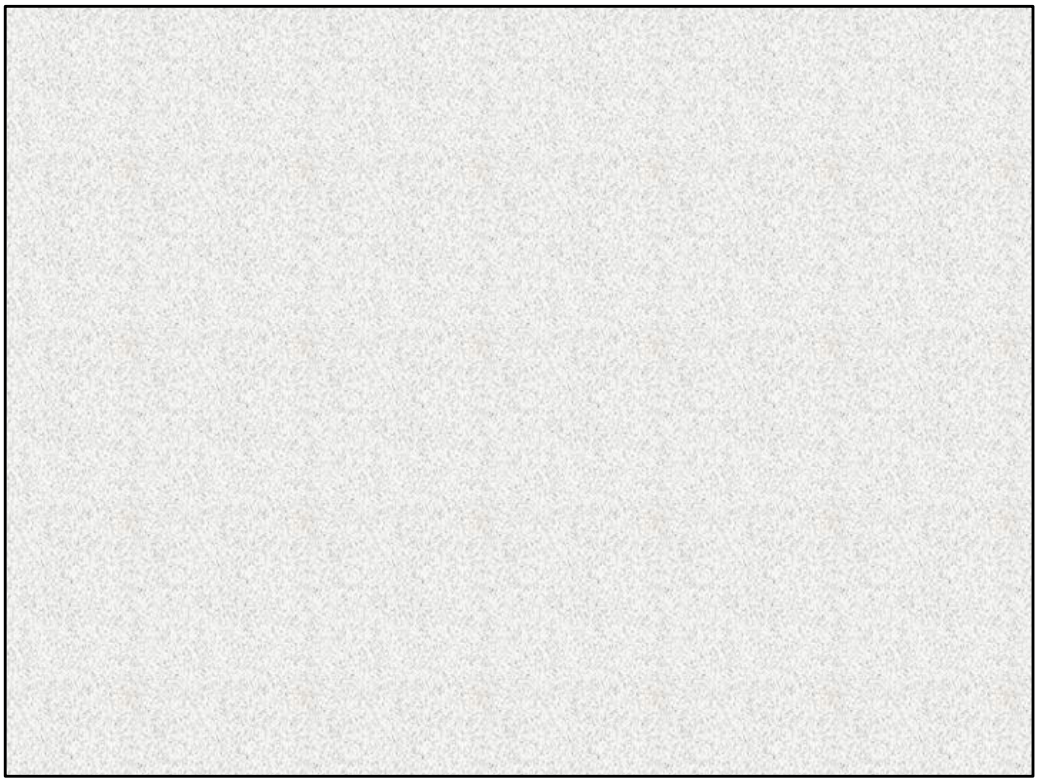

Have audience share what they drew
Compare to actual slide– many folks miss the triangle, most folks miss the doubled "the"
Our brains filter out tremendous amounts of information in order to be able to function– we saw this with the attention slides.
In this case, the brain recognizes patterns and decides what is relevant and what isn't. It looks for the familiar and filters the unusual unless told to look for it.

The opposite happens, too.

Who's a good reader? Read this:

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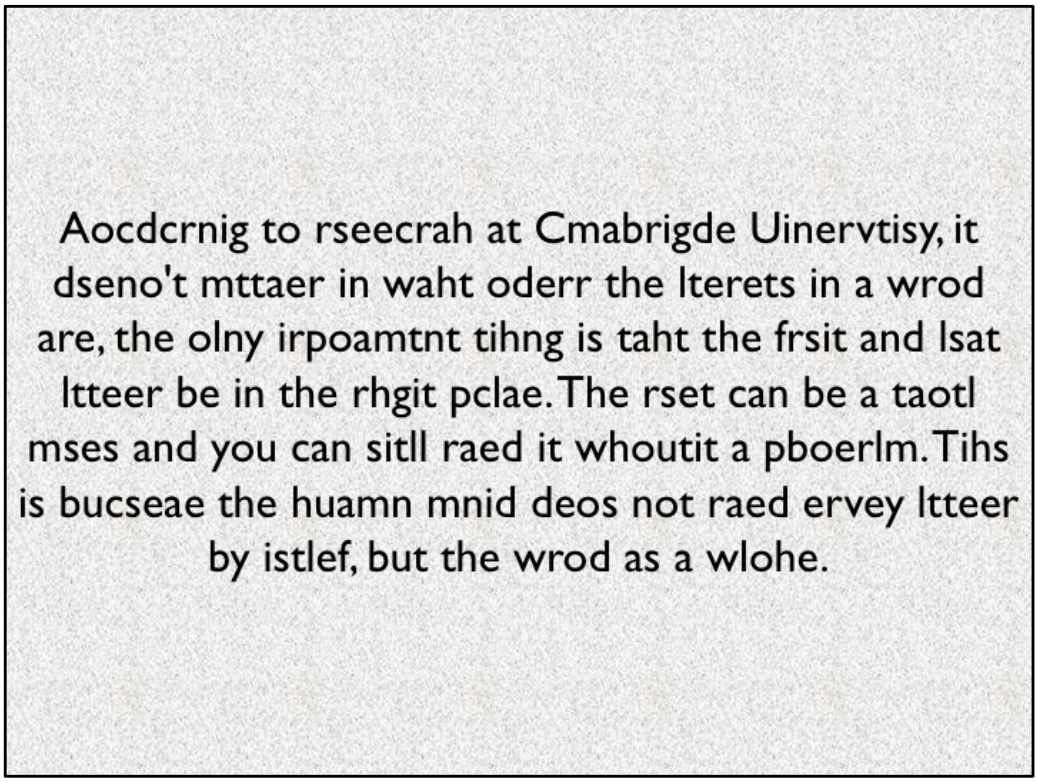

Our brains change what we see to create order from chaos. In this case, we're seeing things that aren't there. Earlier we didn't see things that were there.

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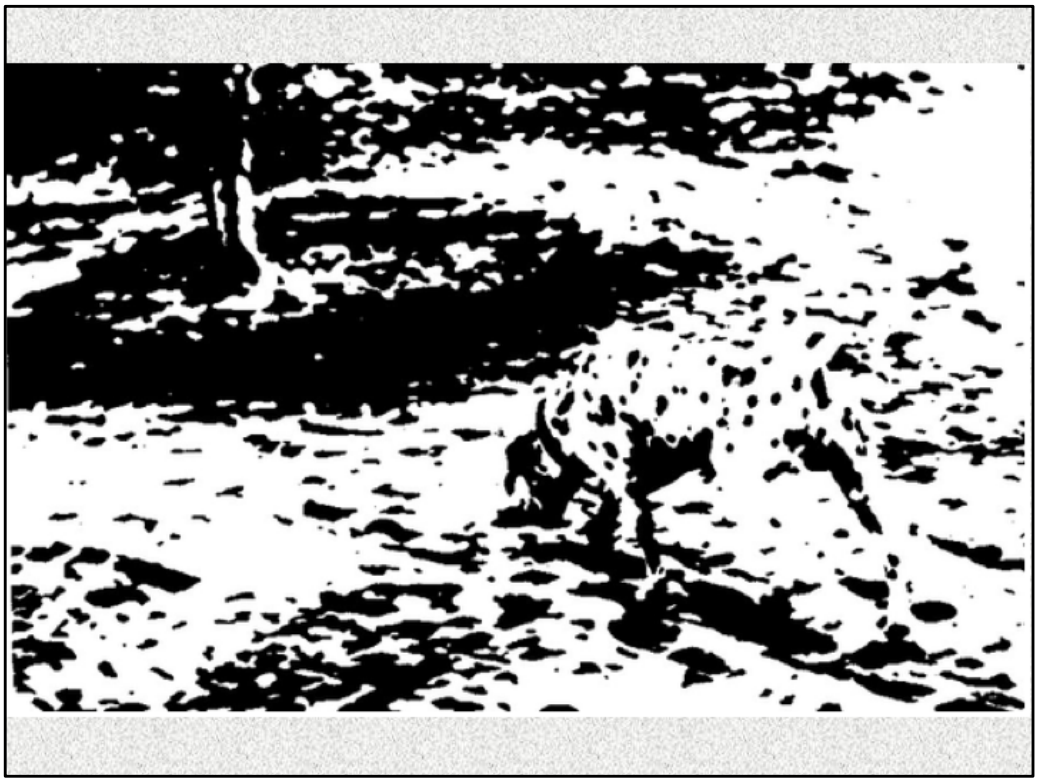

Again, patterns.

Raise your hand when you can tell what's going on in this picture.

Highlight the dog—

Brain is casting about for schema – experiences with dots. Once a part is recognized, it can categorize the whole thing – reference to Aparna's hat pictures

Here's another

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First image – look, raise hand if you see it.

Sometimes it takes priming to make you see it.

What happens if I say Frog

How bout this flash (forward and back)

Now that you've seen it, your brain has made links and will see it much quicker in the future

To a certain extent, this explains the grilled cheesus effect

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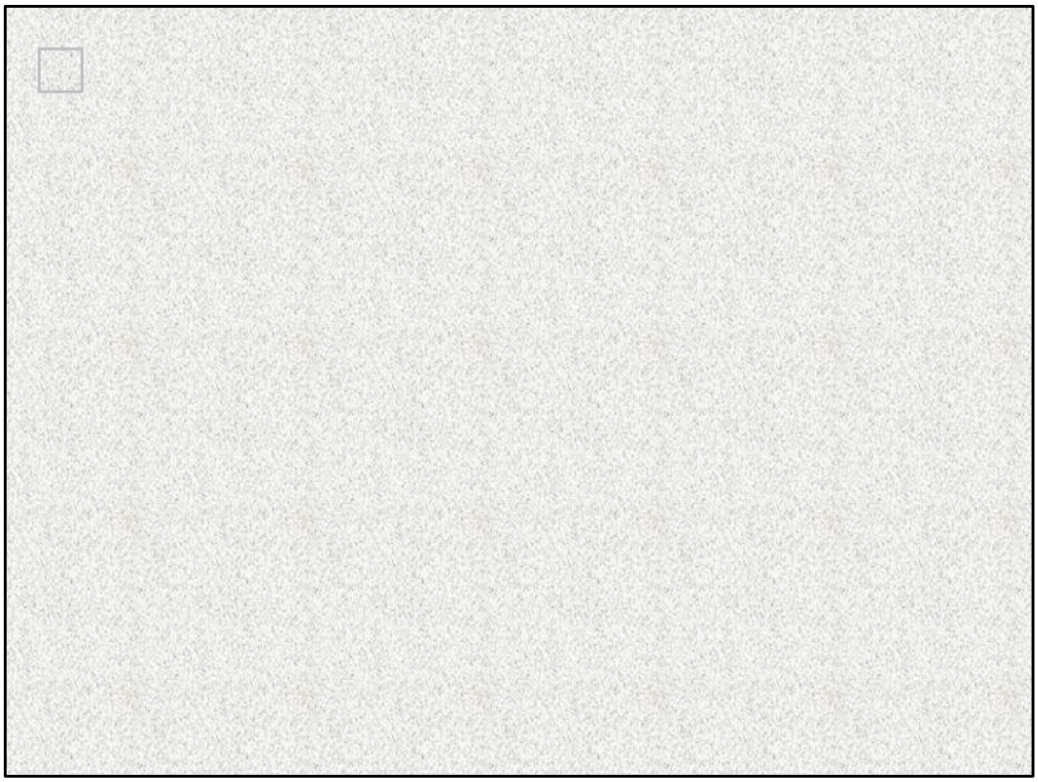

Do cup game now
The brain is primed to remember these patterns– a heuristic in this case: left two, end two, left two
We get so focused on the pattern that we miss the fact that the situation has actually changed– we force the pattern without recognizing the change of one variable invalidates the pattern. – example of shocky VS

PRIMING LEAD IN
This works best with 3 folks, can work with 7

Choose a double digit number from 1-50
Both digits must be odd and cannot be the same digit
Write it down
Click to last slide? 37

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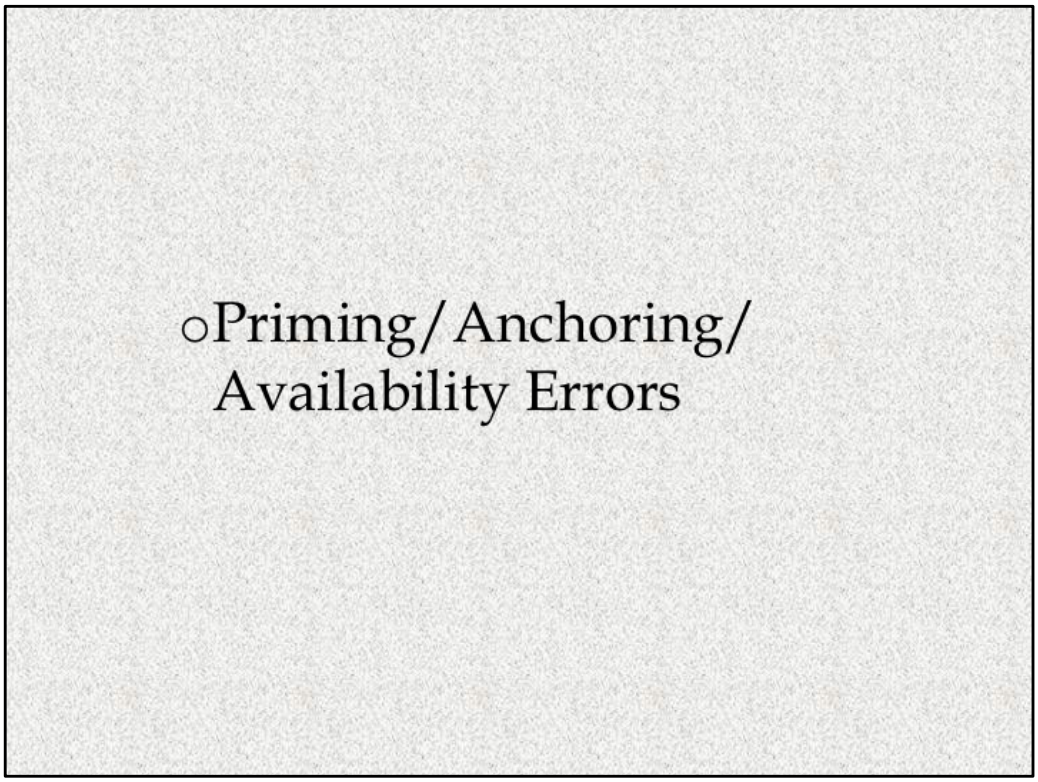

Priming – I set you up to come up with that number – it was in your brain, I threw a bunch of limiting factors out there & brain realized those two would fit
Other options were: 13, 15, 17, 19, 31, 35, 39 – seems like magic, but I had a 1 in 8 chance of getting it right.

Anchoring – fixating on one piece of data, often at the exclusion of other data – often the 1st or last data gathered. Dispatch example

Availability – fixating on the first info to come to mind – not unlike priming. Right after a class on altitude, everything must be altitude related. The "flu" that went around this year, Brown Recluse bites.

Ok, I'm going to show you a picture of an outdoor activity, and I'd like you to look at it for risks. [click to helmet… oops! Wrong slide... Here it is, next slide]

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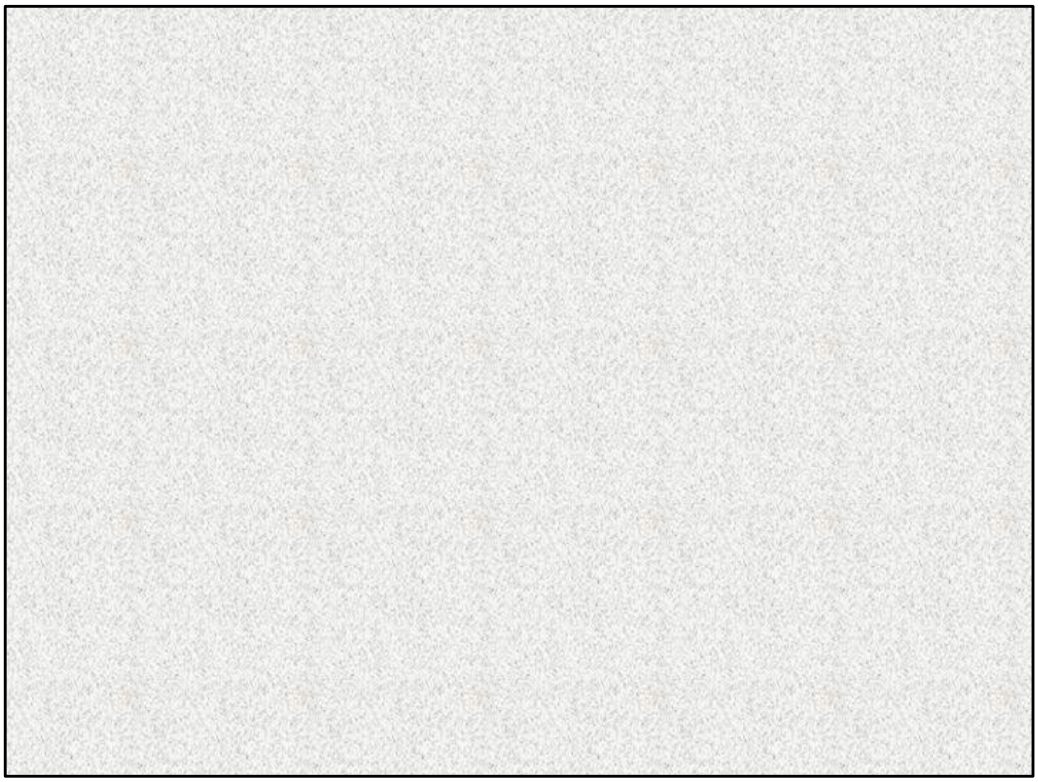

Okay – same idea

Show one half of room RABBIT
Show one half of room DUCK

Click through quickly

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What's the first thing you look for?

Likely the helmets.

Raise your hand when you find other risks

-climber on R appears unroped
-belayer next to him has hands off belay?
-climber on L missing legs?

Takes brain some time to move past the helmet priming (yup, that was on purpose) to see other challenges

Even with this next one

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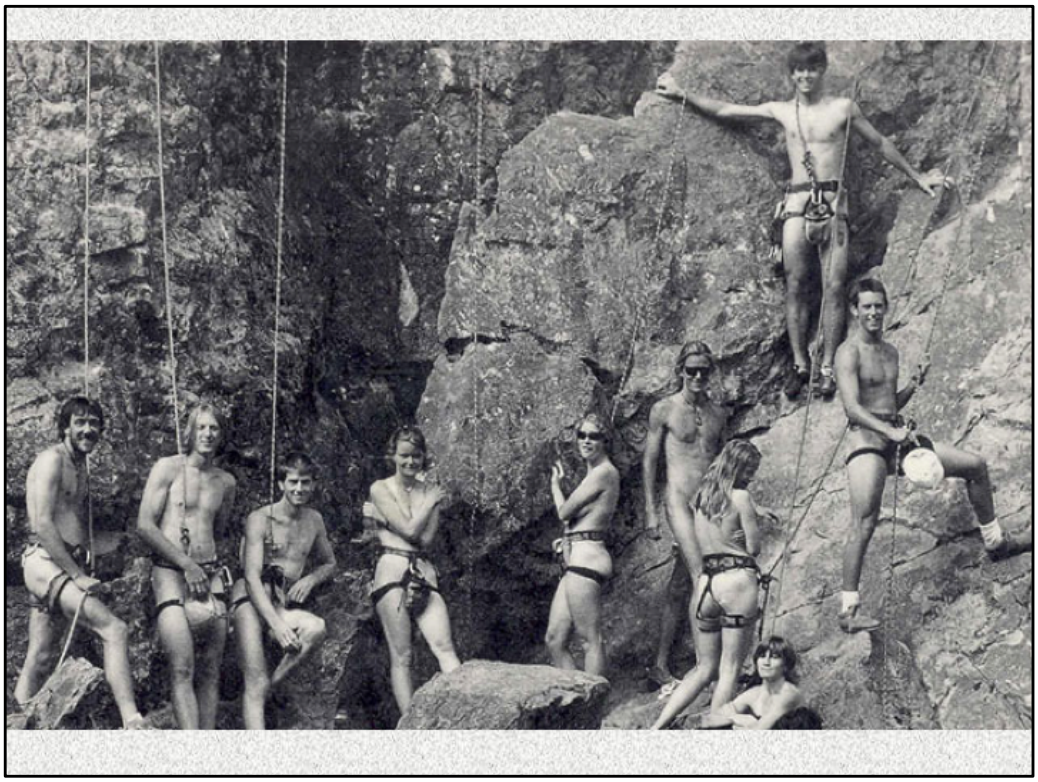

You probably looked for helmets, ropes and legs before realizing that they're all naked!

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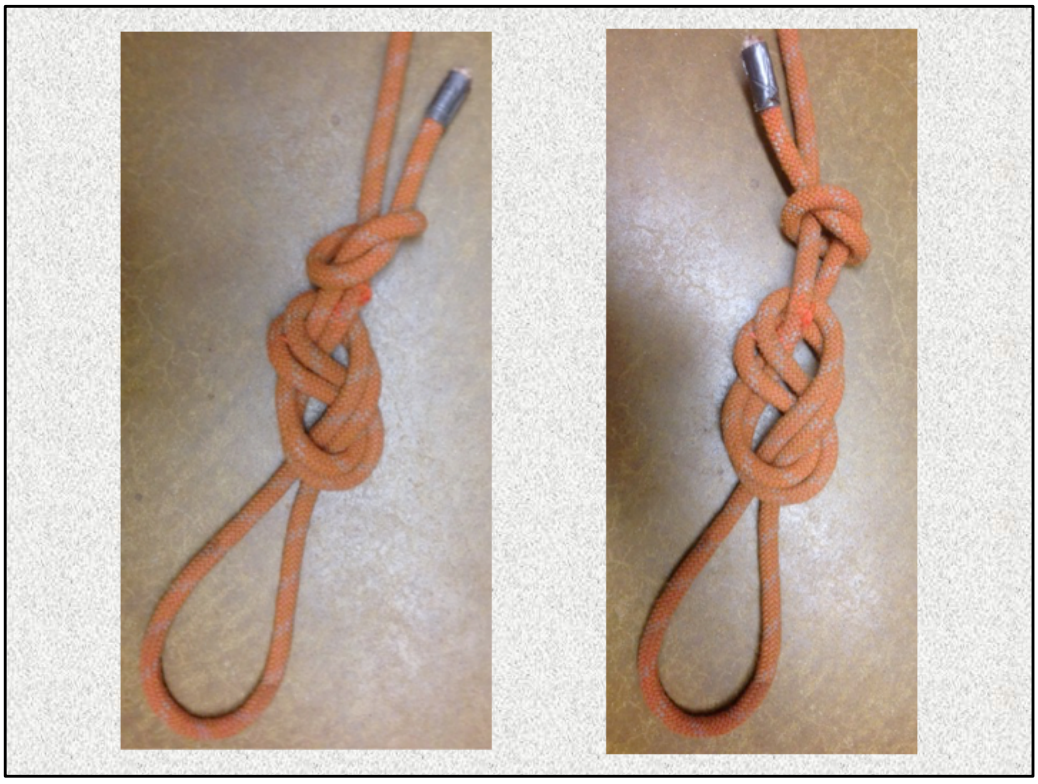

Bidirectional hierarchical network model

- Brain is predictive– at a certain level it tells the eyes what to see, and does a superficial scan for differences

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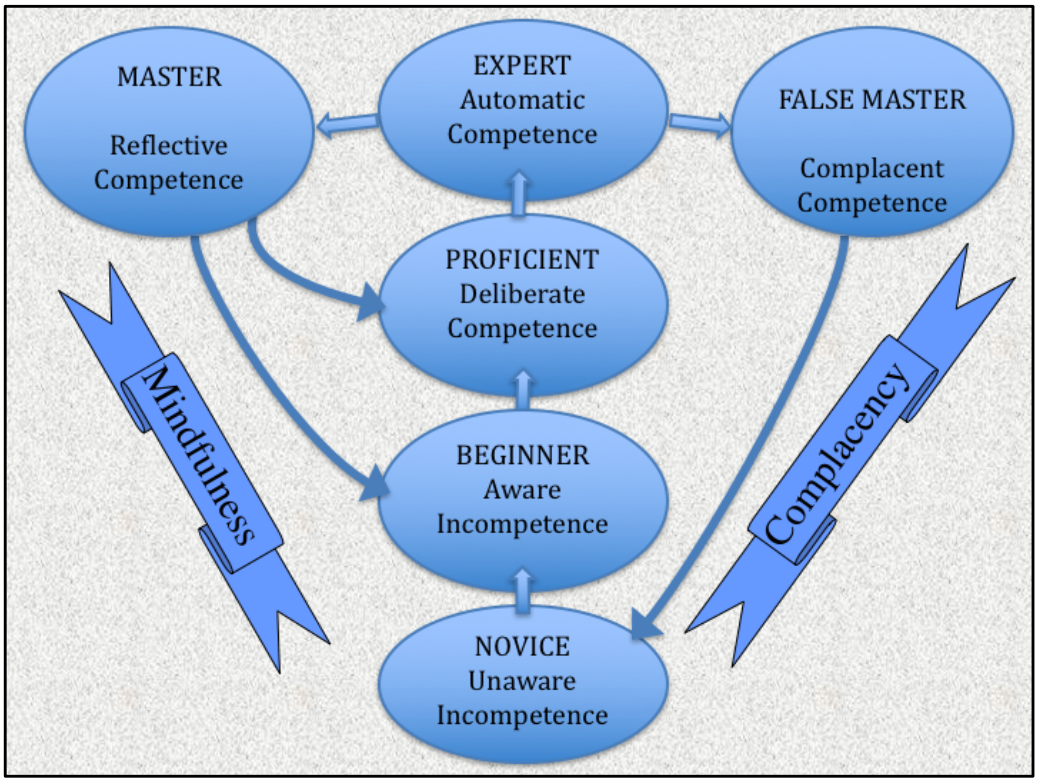

Our new model, showing the cyclical nature of the true master.

After all, Yoda wasn't a Jedi Expert...

Making Good Decisions

- Use protocols
- Situational awareness
- Tolerate uncertainty
- Be self-aware

- Use your team
- Communicate
- Seek feedback
- Get good info

Be mindful and intentional

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Further Reading:

- *Sleights of Mind*, Macknik & Martinez-Conde
- *The Invisible Gorilla*, Chabris & Simons
- *Mind over Mind*, Burdik
- *Things You Cannot Unsee (And What That Says About Your Brain),* Madrigal, The Atlantic

Action Steps

- Introduce your staff to some of these activities in order to increase their awareness of our limitations.
- Address the sense-making and decision-making processes as worthy of attention independent of the actual decisions made.
- Conduct a review of a situation that went well, in order to determine why it went well.

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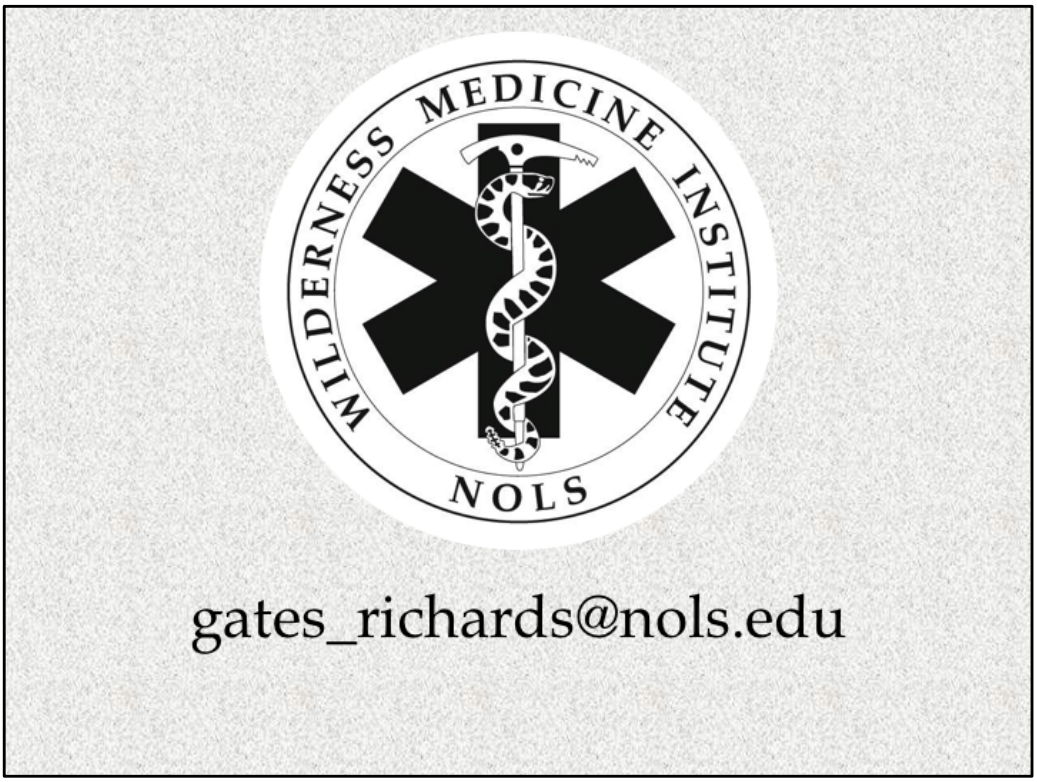

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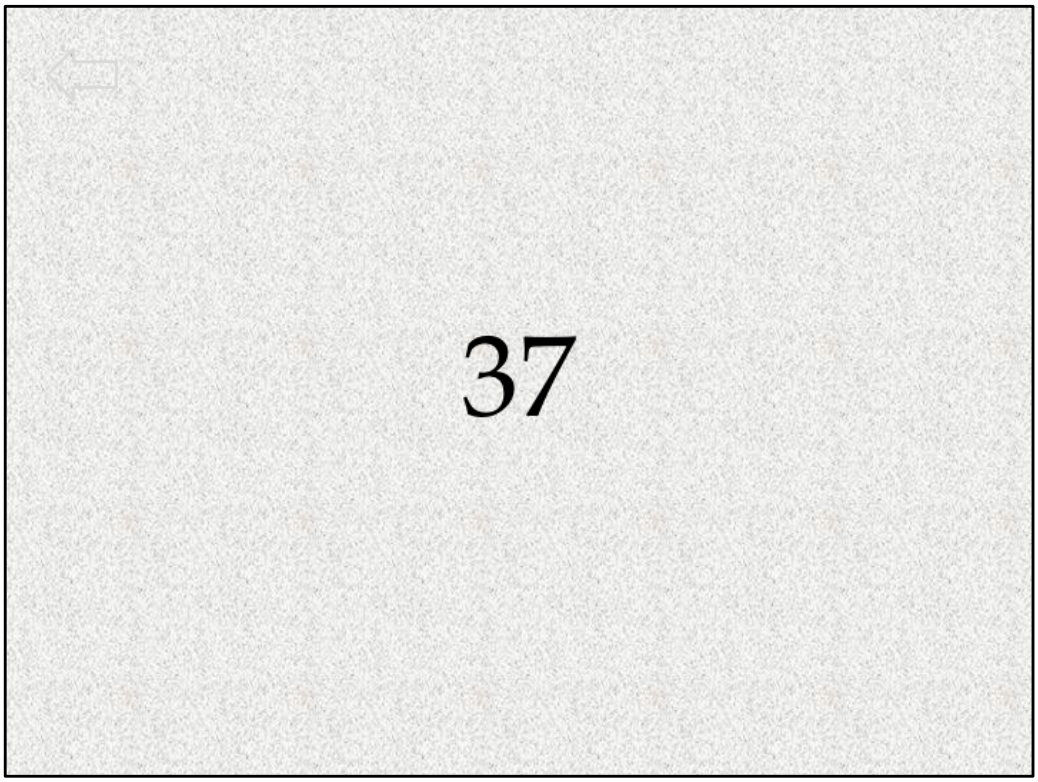

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