SAMatters.com

SITUATIONAL AWARENESS MATTERS!

Situational Awareness
&
High-Risk Decision Making

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Before we begin…

Complex topic

New Information

Be open minded

Ask questions

Participate

Handout

No emergency responder ever goes to a call thinking to him or herself…

Today is the day!

Today is the day that…

"I'm going to lose my situational awareness…

Make some bad decisions…

Jeopardize my safety…

And the safety of my crew."

But it happens… a LOT!

The goal of this program…

To help you to understand the…

WHAT, HOW, & WHY

of situational awareness and high-risk decision making.

DEEP KNOWLEDGE

The foundation for high-risk decision making is situational awareness.

#3
Contributing Factor to casualty events:

Human Error

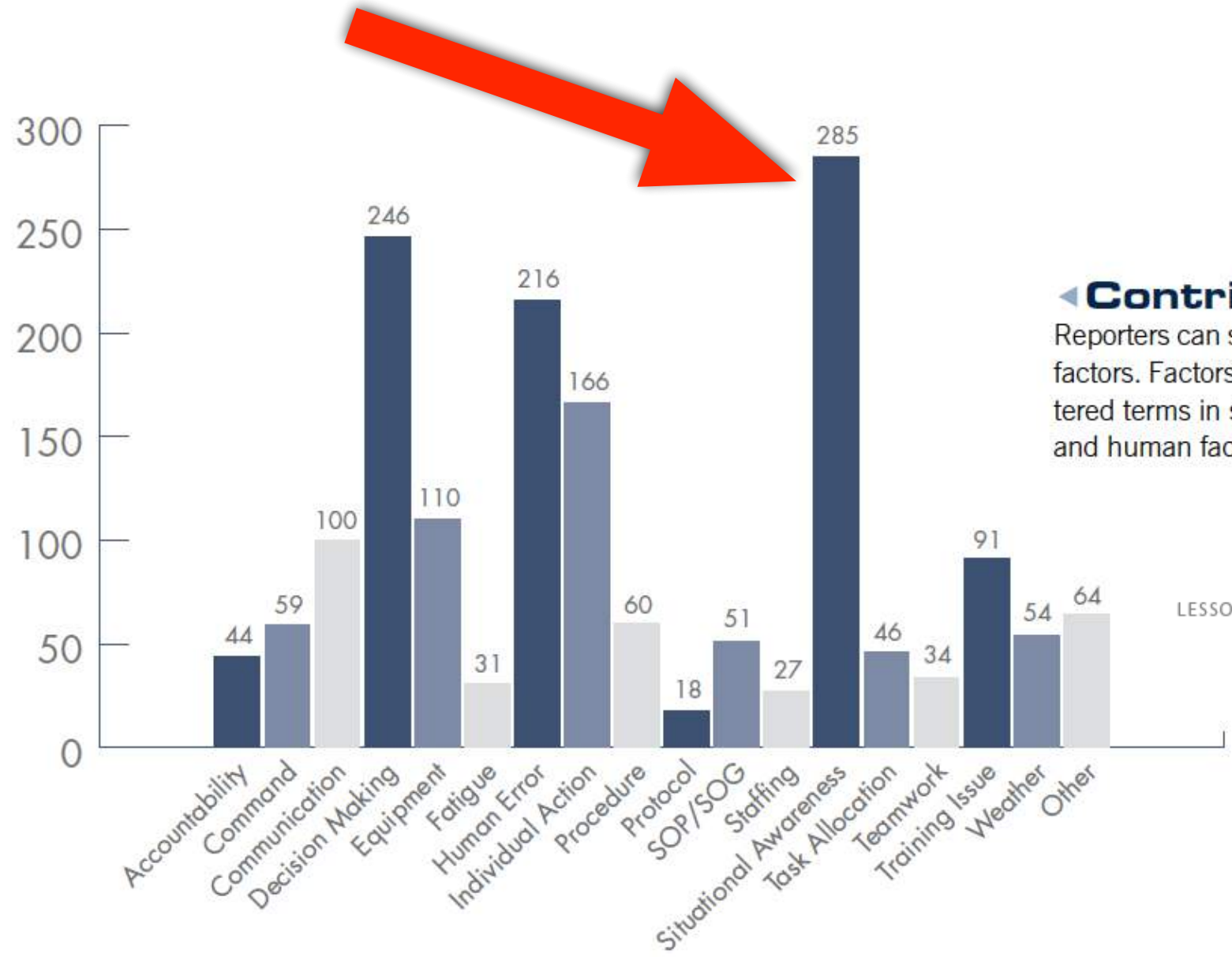
(Human Factors)

#2
Contributing Factor to casualty events:

Poor Decision Making

#1
Contributing Factor to casualty events:

Flawed Situational Awareness



Contributing Factors

Reporters can select up to five of 20 contributing factors. Factors are based on frequently encountered terms in standard injury reporting systems and human factors research.

NEAR MISS

LESSONS LEARNED BECOME LESSONS APPLIED

NationalNearMiss.org


STRESS

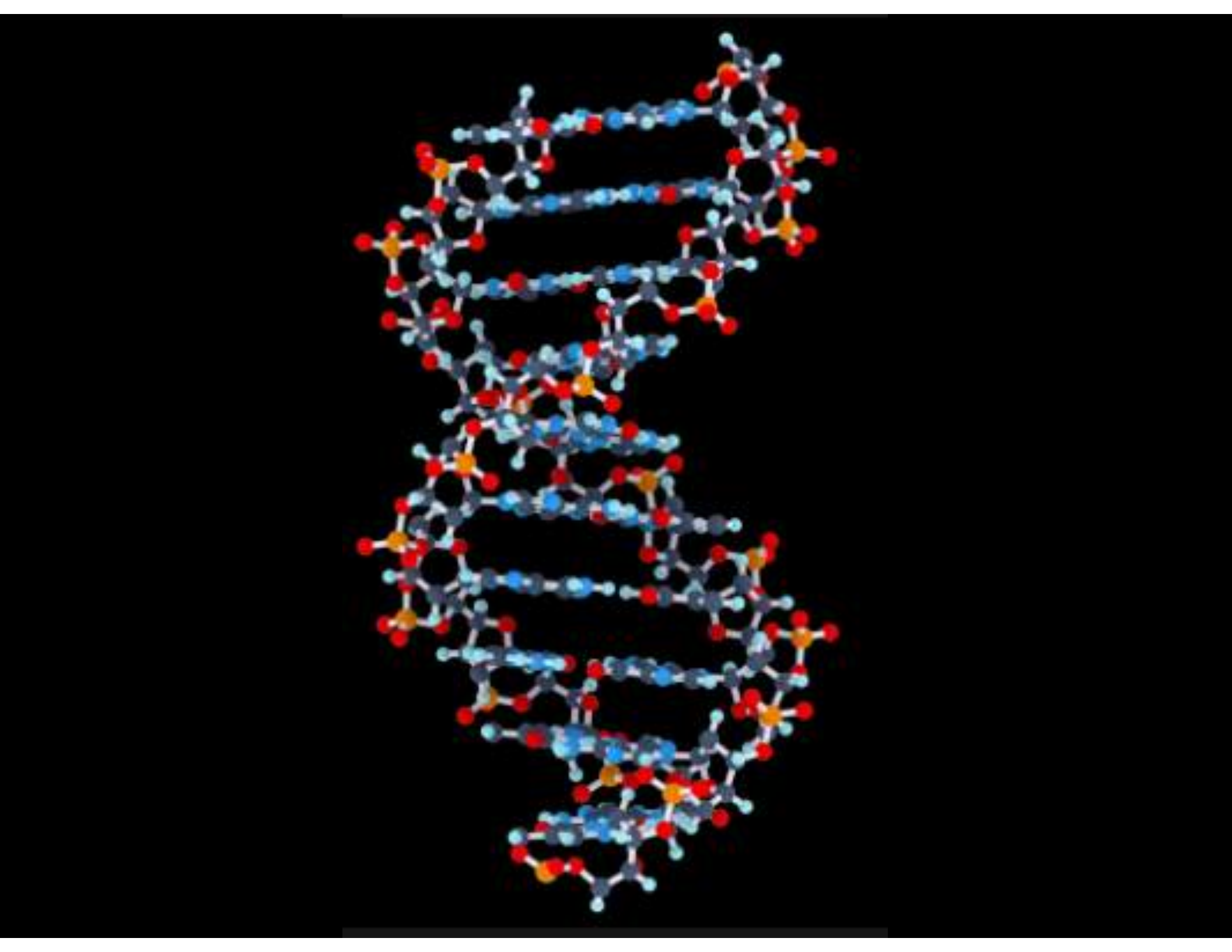
Stressed brains function differently than non-stressed brains.

Under stress…

Your brain
is on drugs!

Under stress…

Hereditary instincts kick in.




FIGHT or FLIGHT

Freeze!

Under stress…

Rational judgment
is impaired.

Under stress…

Intuitive judgment dominates.

(Primal thinking)

Under stress…

Attention narrows.

Under stress…

Hyper vigilant.

Under stress…

Struggle to process and understand complex, detailed, & mass information.

Under stress…

Revert to behaviors that are comfortable, routine and/or habitual.

Realistic and repetitive training builds muscle memory that can be life saving.

Sadly…

Many firefighters have been trained to fail too!

We'll cover that later.

Situational awareness

Ability to **perceive** AND **understand**

what is happening around you

(in context to how time is passing)

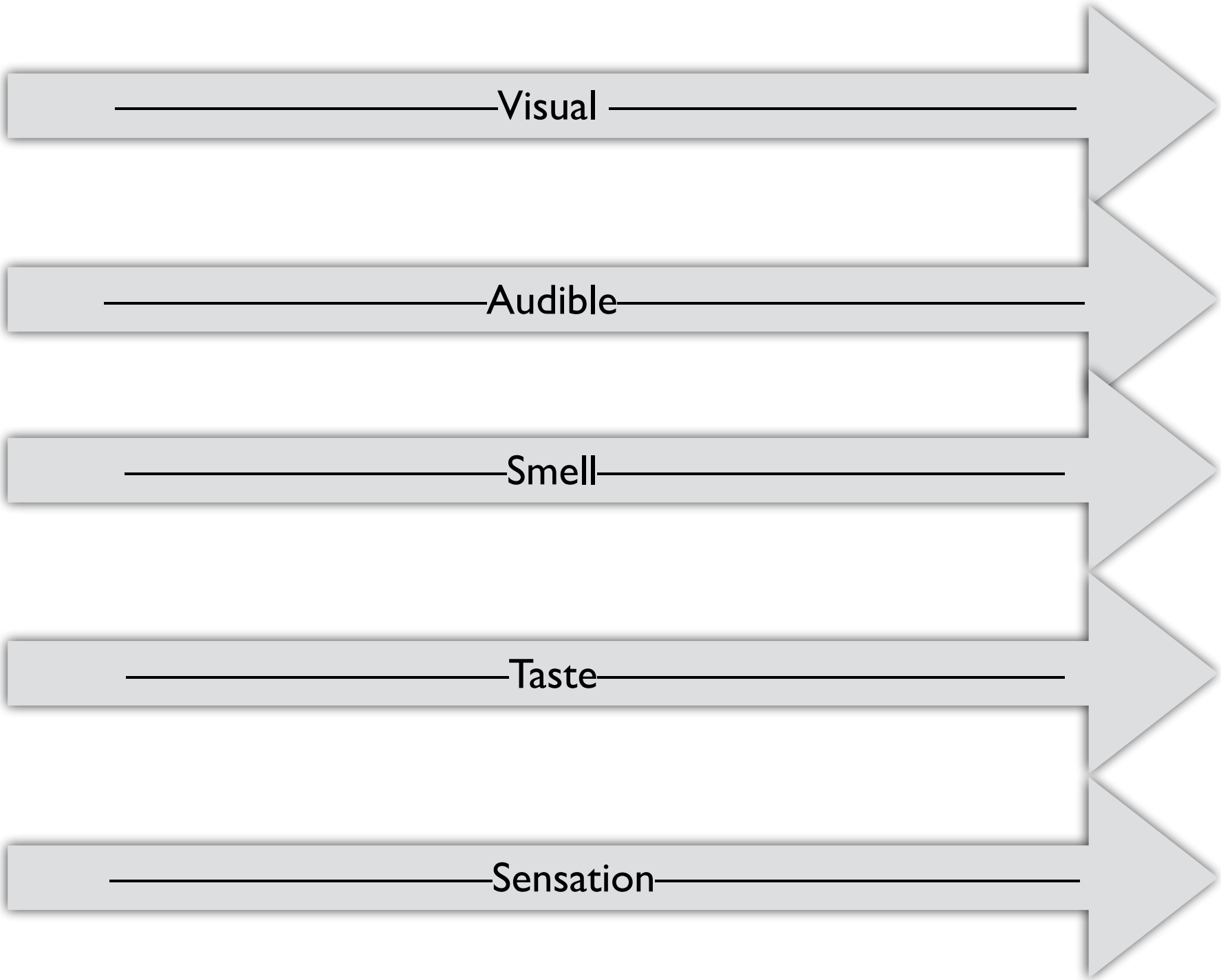
and then, in turn, being able to accurately **predict** future events…

in time to avoid bad outcomes.

Perception

Using the senses to capture information… (clues and cues) about the current situation.

- **I pay attention…**
- **I keep my head on a swivel…**
- **I look up, down, and all around…**
- **I actively listen…**
- **I complete a size-up…**


Visual
Audible
Smell
Taste
Sensation

Understanding

Making sense out of what you:

See, hear, feel, taste & smell

Comprehension

Moment of clarity

Best Practice

Ask yourself:

“What does this mean?”

Best Practice

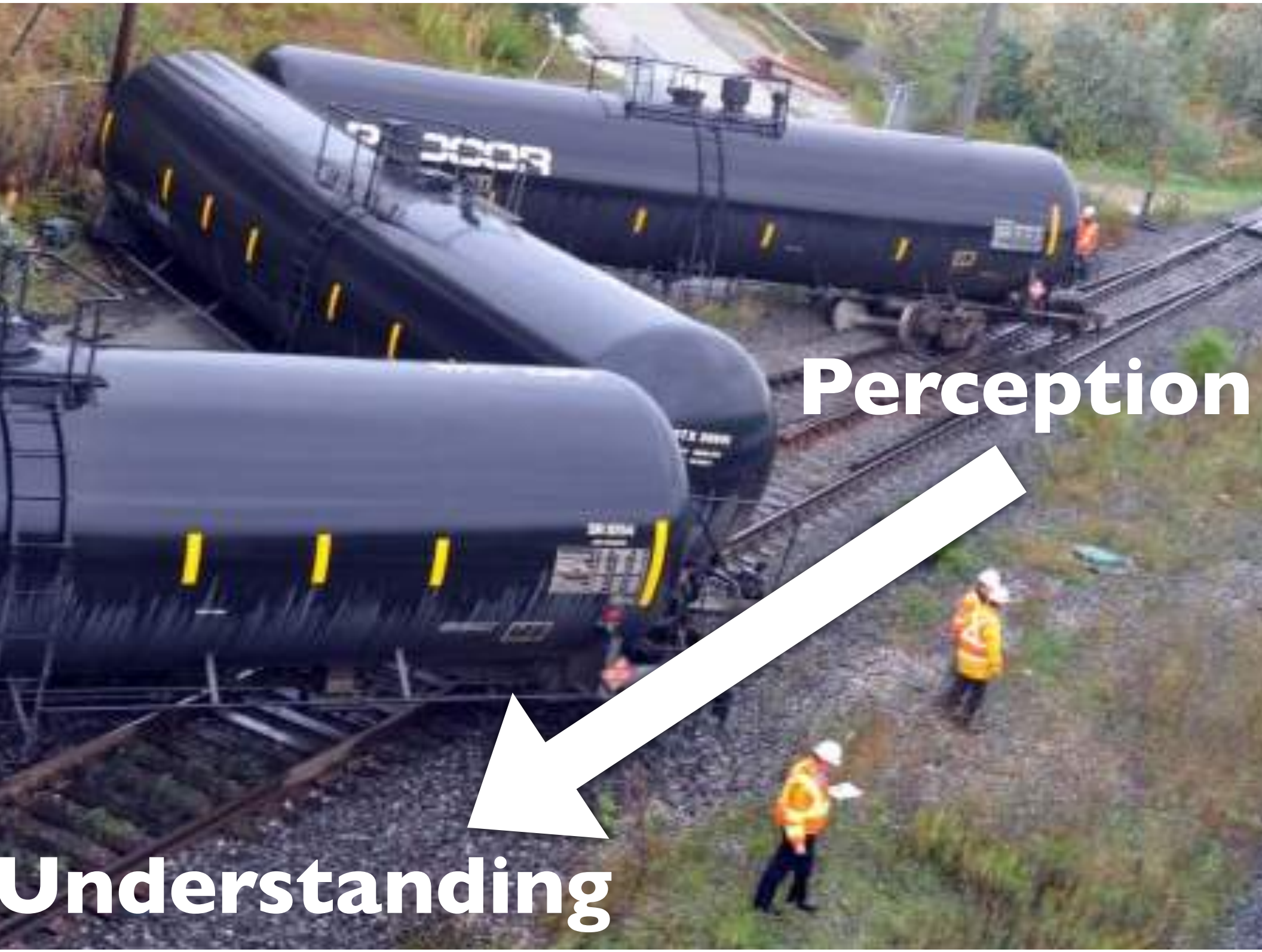
Ask yourself:

"Is this what I expected?"

It seems so easy…

See… and understand.

Hear… and understand.


Perception
Understanding

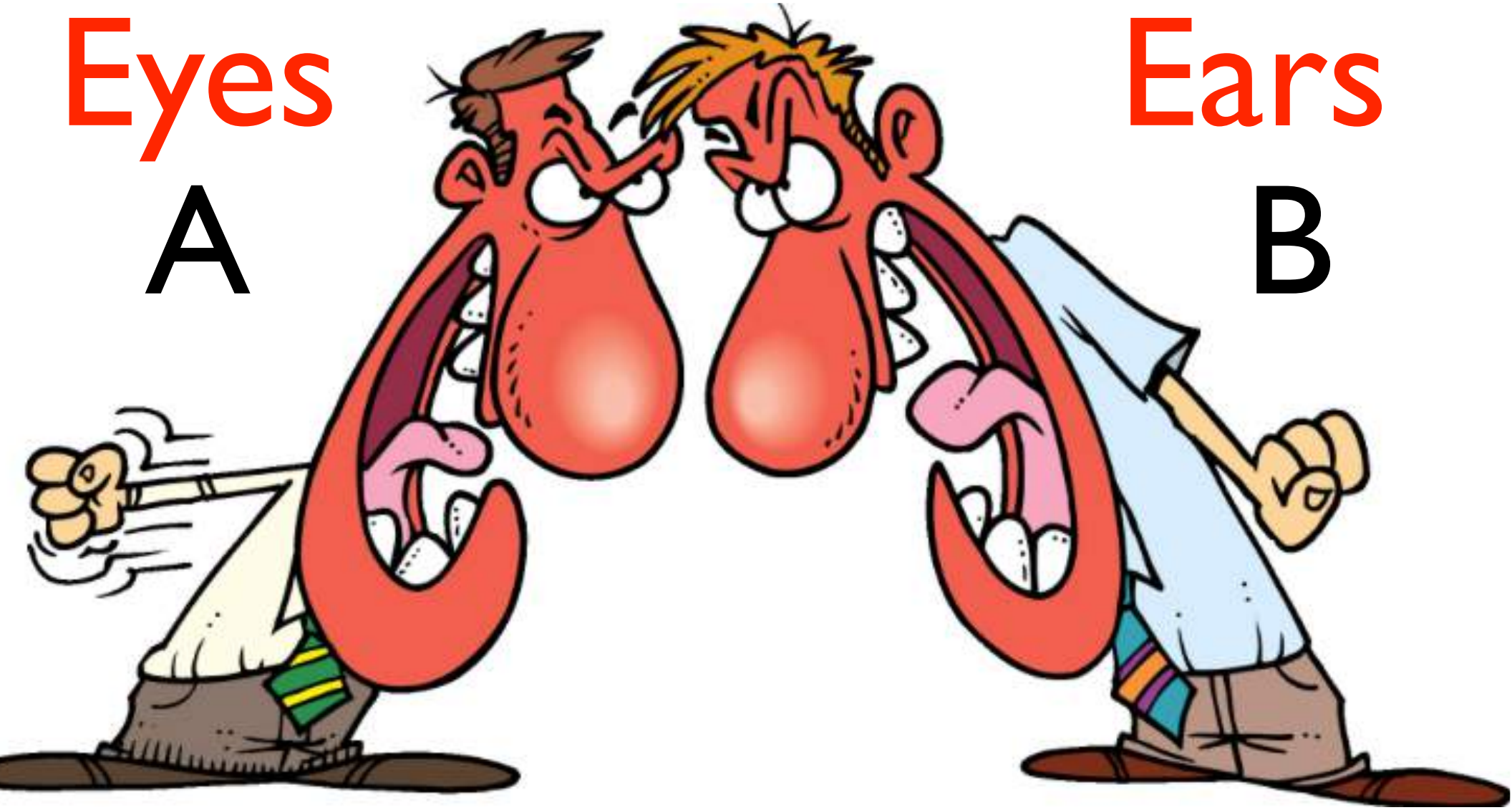
Sensory Conflict

Eyes

A

Ears

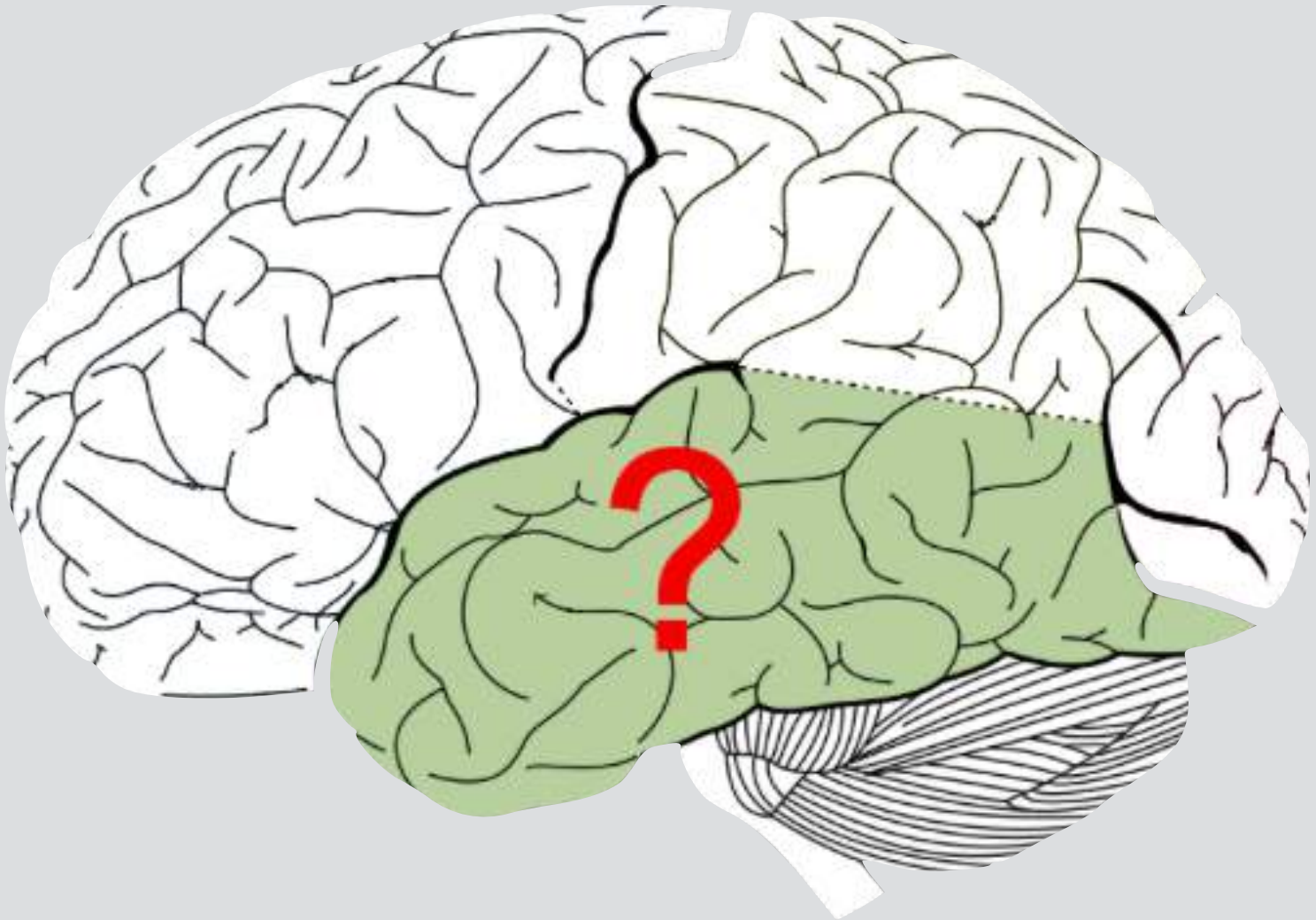
B



Mind Drift


Bath & Body Works
PEACH
Bellini
GENTLE
FOAMING
HAND SOAP
PEACH
Bellini

Where in your brain does your puzzle of understanding get assembled?




MAGIC Etch A Sketch© SCREEN
It truly is your
Magic
Screen


Sensation
Visual
Taste
Audible
Smell

There are two kinds of puzzle pieces:

Positive = can see/hear

Negative = cannot see/hear

Only experts can comprehend the meaning of the missing information.

Memory Recall

Fact

The capacity of long-term memory:

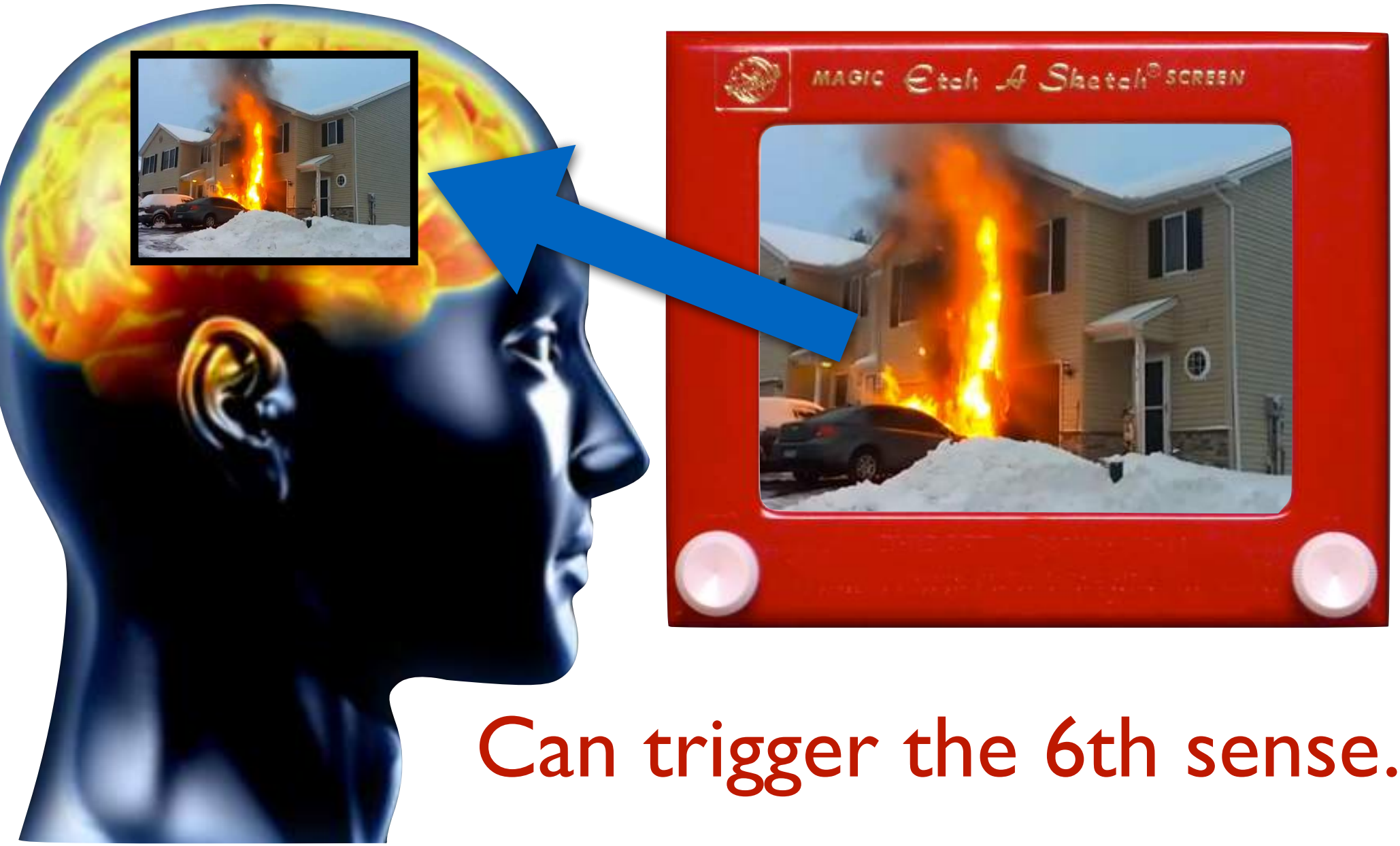
10x all the information
on the Internet.

Fact

You can only consciously access:

5% of our long-term memory data base.

Memory Recall



Can trigger the 6th sense.

Intuition

Knowing…

Without knowing…

How you know.

Your Red Flag Warning System

Demonstrating the power of intuition.

There are some problems with intuition:

It is easy to dismiss or distrust intuition.

It is hard to justify decisions based on “feelings” (without facts & data).

Intuition can be wrong!


Prediction
Anticipating future events
before they happen.

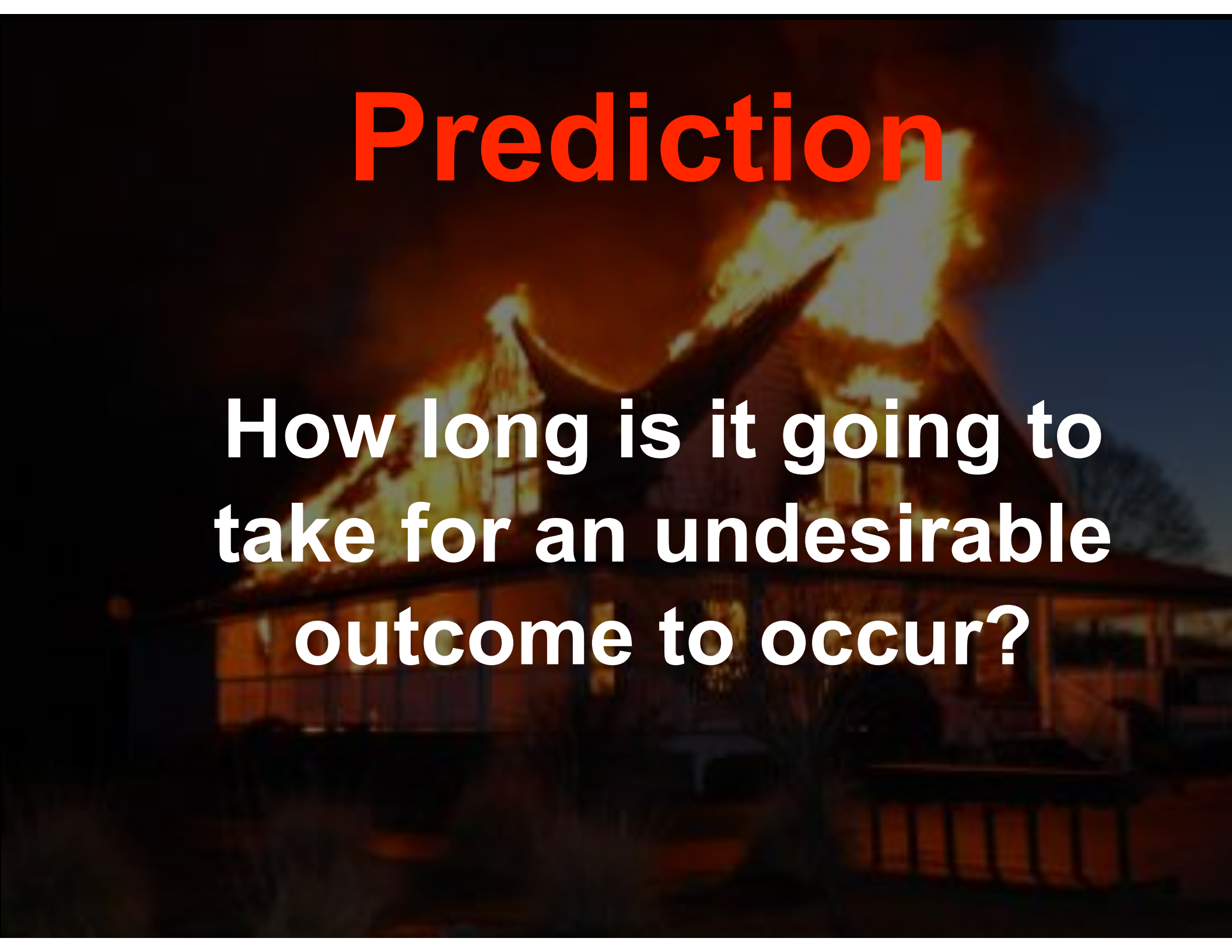

Prediction
Begin… with the end in mind.

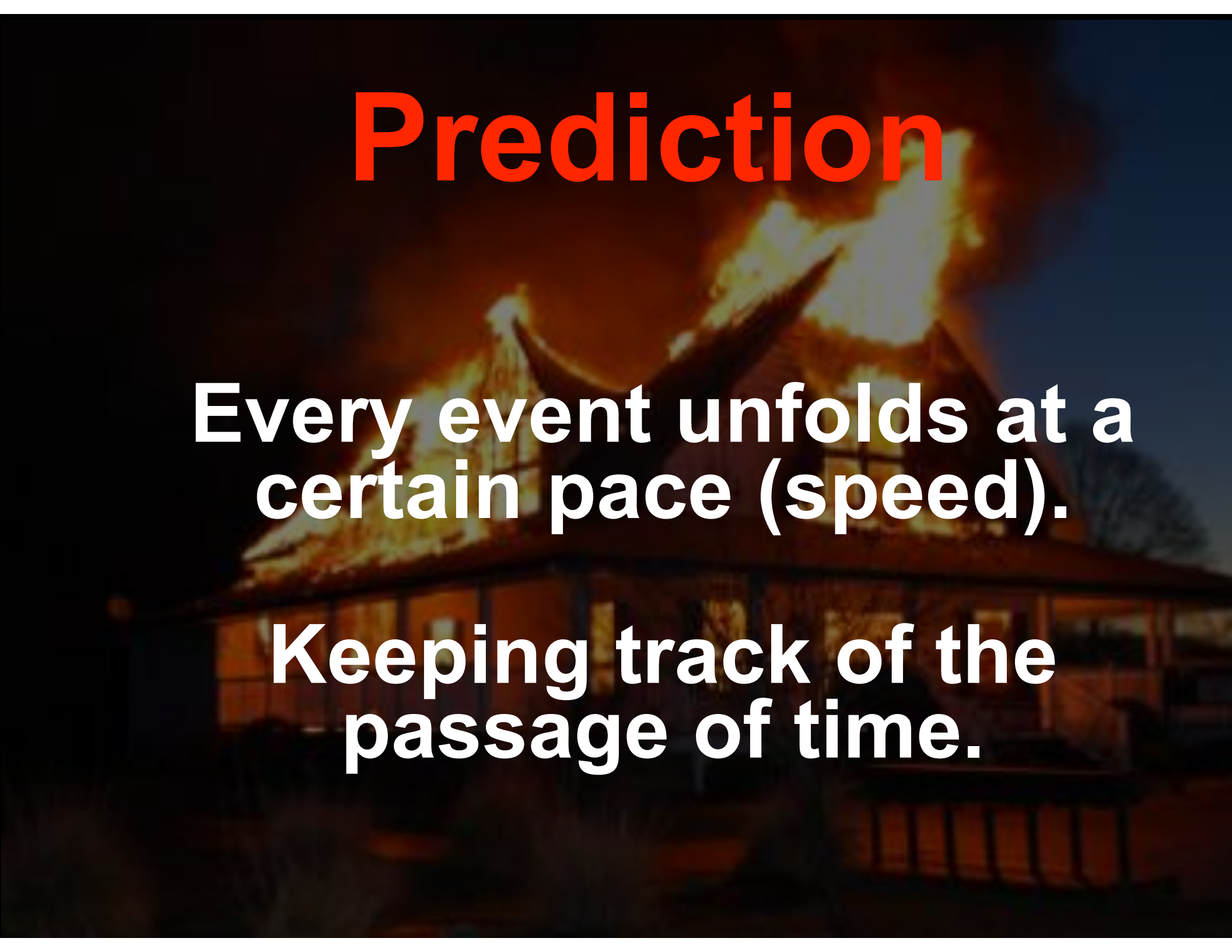
Prediction

Where is this event headed?

If…

We do nothing but watch.


Prediction
How long is it going to take for an undesirable outcome to occur?


Prediction
Every event unfolds at a certain pace (speed).
Keeping track of the passage of time.

The ability to perceive AND understand what is happening in your environment

(in context to how time is passing)

and then, in turn, be able to accurately predict future events… in time to avoid bad outcomes.


Prediction
Setting Expectations


Prediction
Can we change the outcome?

Don’t get in the way of outcomes you cannot change.

If you do…

You will become a victim of the outcome.


Prediction
Are the conditions right?


Prediction
Do we have the right resources?

Five situational awarenesses

1. Personal Awareness
2. Team Awareness
3. Resource Awareness
4. Big-picture Awareness
5. Shared Awareness


Prediction
Can we operate faster than conditions are changing?

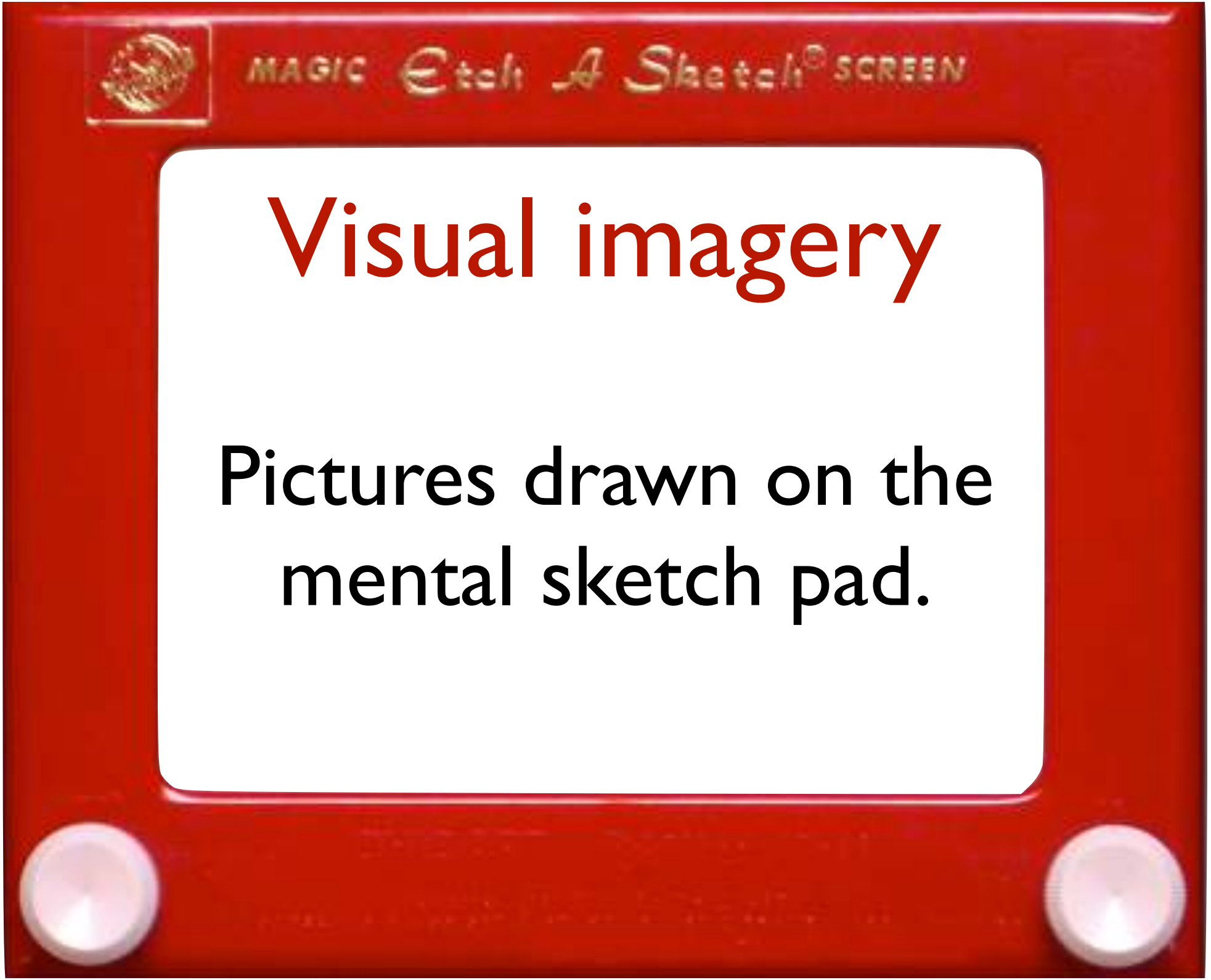

Prediction
How much time do we have?


MAGIC Etch A Sketch© SCREEN
Your Mind’s Eye


MAGIC Etch A Sketch© SCREEN
Situational Awareness Development Process.

Sensory inputs

Sight + sound + taste
+ smell + feel



Visual imagery

Pictures drawn on the mental sketch pad.

Memory Search

Explicit & Tacit Knowledge

Doom - Bliss - Nothing

Forecasting

Visualize outcomes prior to engagement.

How we make decisions

Traditional Decision Making Process

1. Define the problem
2. Identify decision criteria
3. Allocate weights to the criteria
4. Develop alternatives
5. Evaluate the alternatives
6. Select the best alternative
7. Evaluate the effectiveness of your decision.

Then...

The military commissioned a study…

that would forever change the way we looked at…

decision making under stress.

How do you use this process at fire scenes?

1. Define the problem
2. Identify decision criteria
3. Allocate weights to the criteria
4. Develop alternatives
5. Evaluate the alternatives
6. Select the best alternative
7. Evaluate the effectiveness of your decision.

What did the commander say?

"I don't use that process!"

Rode along again.

What did the next commander say?

“I don’t use that process!”

What do you do?

Dynamic Decision Making Process

Step 1:

Size-up the situation quickly.

Dynamic Decision Making Process

Step 2:

Focus on the most relevant information.

Dynamic Decision Making Process

Step 3:

Compare the current situation to past experiences.

Identify typical solutions.

Dynamic Decision Making Process

Step 4:

Detect atypical/unusual problems & seek explanations for them.

Dynamic Decision Making Process

Step 5:

Run mental options of decision choices in my head.

Dynamic Decision Making Process

Step 7:

Make a decision and implement an action plan.

Dynamic Decision Making Process

Step 6:

Monitor conditions and compare them to expectations.

Dynamic Decision Making Process

Repeat situational awareness process continually.

Dynamic decision making requires…

1. Situational awareness.
2. Tacit knowledge.
3. Ability to predict future events.
4. Self confidence to trust your intuition.

A situational awareness case study

Be thinking about…

Perception

Understanding

Prediction

Flawed Situational awareness…

Is **never** the root cause of an accident.

Flawed situational awareness a **symptom**.

The **barriers**…

That **flaw awareness**…

are the **root cause**.

Situational Awareness Barriers

Anything that blocks:

Perception
Understanding
Prediction

Shared Awareness

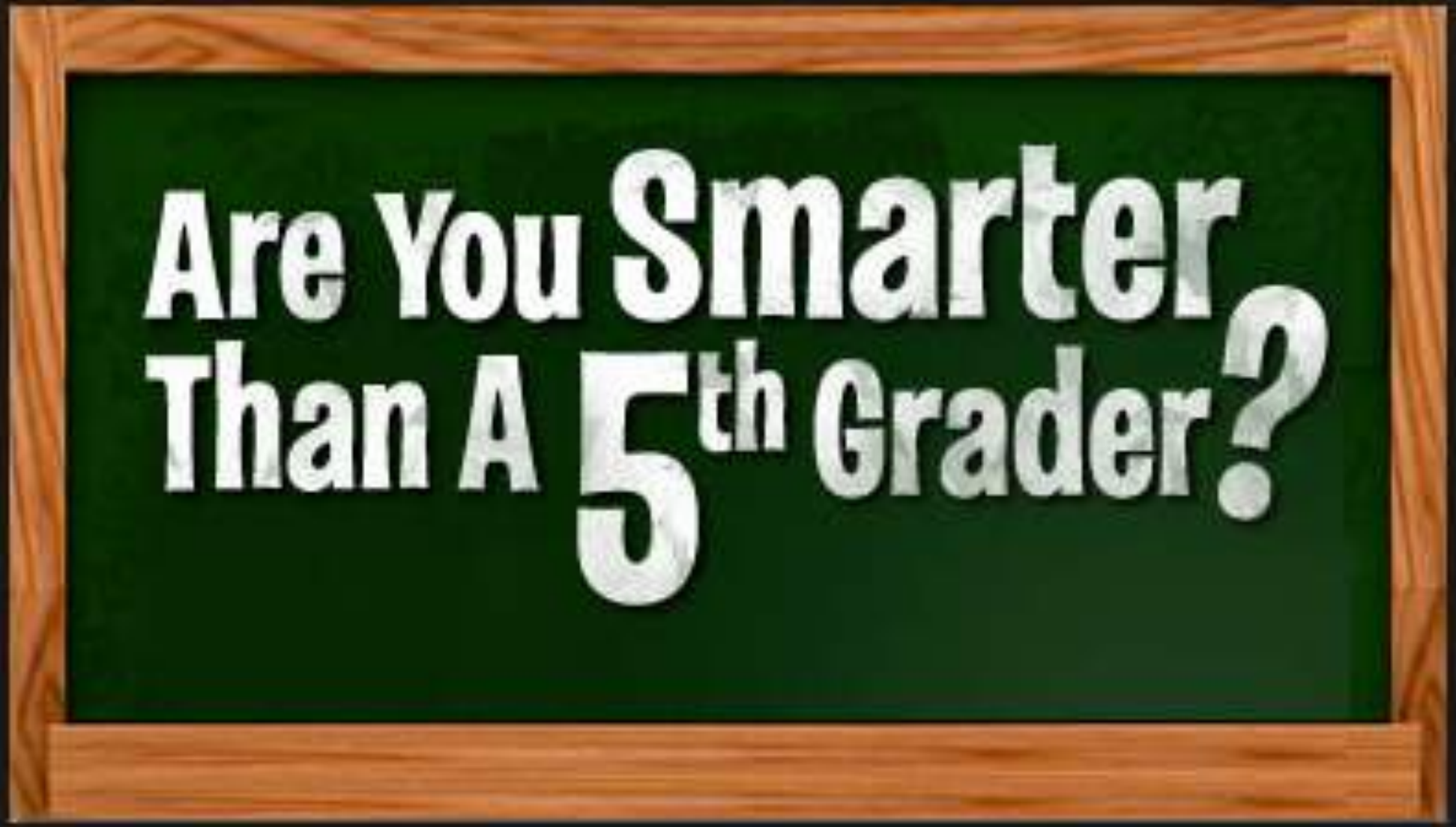
When two or more people have the same understanding about what is going on.

Shared awareness

Demonstration

Heuristics Bias

Mental rules and shortcuts.


Are You Smarter
Than A 5th Grader?

Your brain can be a stubborn.

Once it locks on to something
like an action plan (or .99 cents)

it can be very difficult to change
direction or see alternate solutions.

Pre-arrival lens

BEWARE!

The pre-arrival lens sets up expectations.

(This may cause you to filter out information.)

Best Practice

Say to yourself…

"Maybe"

Best Practice

Conduct an original size-up

Best Practice

Avoid pre-mature decision making.

Best Practice

Have dispatch prompt arriving company for a 360 degree size-up.

Best Practice

"On completion of the 360 size up, we have…"

Urgency

Best Practice

Avoid shortcuts related to SA and decision making.

Best Practice

Avoid the…

"No time to waste!" mindset.

Over Confidence

Complacency

Assumed risk is unavoidable.

Created risk is avoidable.

Learn from near-miss events.

Never let your guard down.

Confabulation

BEWARE!

In the absence of facts your brain can assume.

(Make up it's own reality.)

In the absence of facts we can assume.

(The brain makes up its own reality.)

Your perceptions may not match reality.

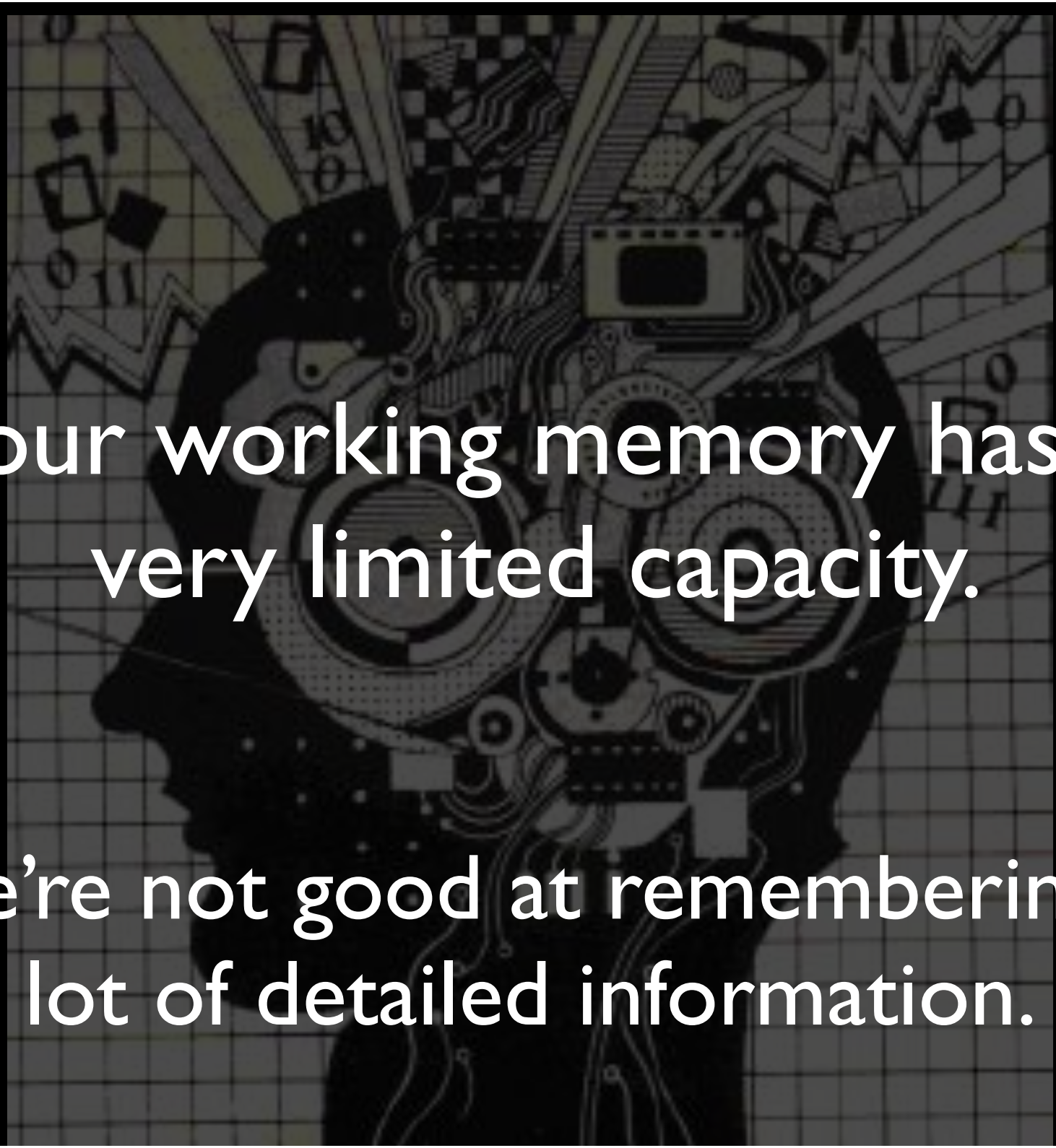
And you may not know it.

Be alert for flawed perceptions of reality.

Best Practice

Use a Devil's Advocate.


Short-Term
Memory Overload



Your working memory has a very limited capacity.

We're not good at remembering a lot of detailed information.

Your brain prioritizes incoming information.

And for the most part,
you cannot control what it
keeps and what it dumps.

The information overload exercise

Respect your short-term memory limits.

Focus on the most important information.

Use memory aids: Worksheet Checklist

Time Distortion

Keep track of the passage of time.

Elapsed Time Notifications

Auditory Exclusion

Radio traffic audit:

Critical

Essential

Non-Essential

Build radio communications into training evolutions.

Use standardized terms and phrases.

BEWARE!

Sensory Domination.

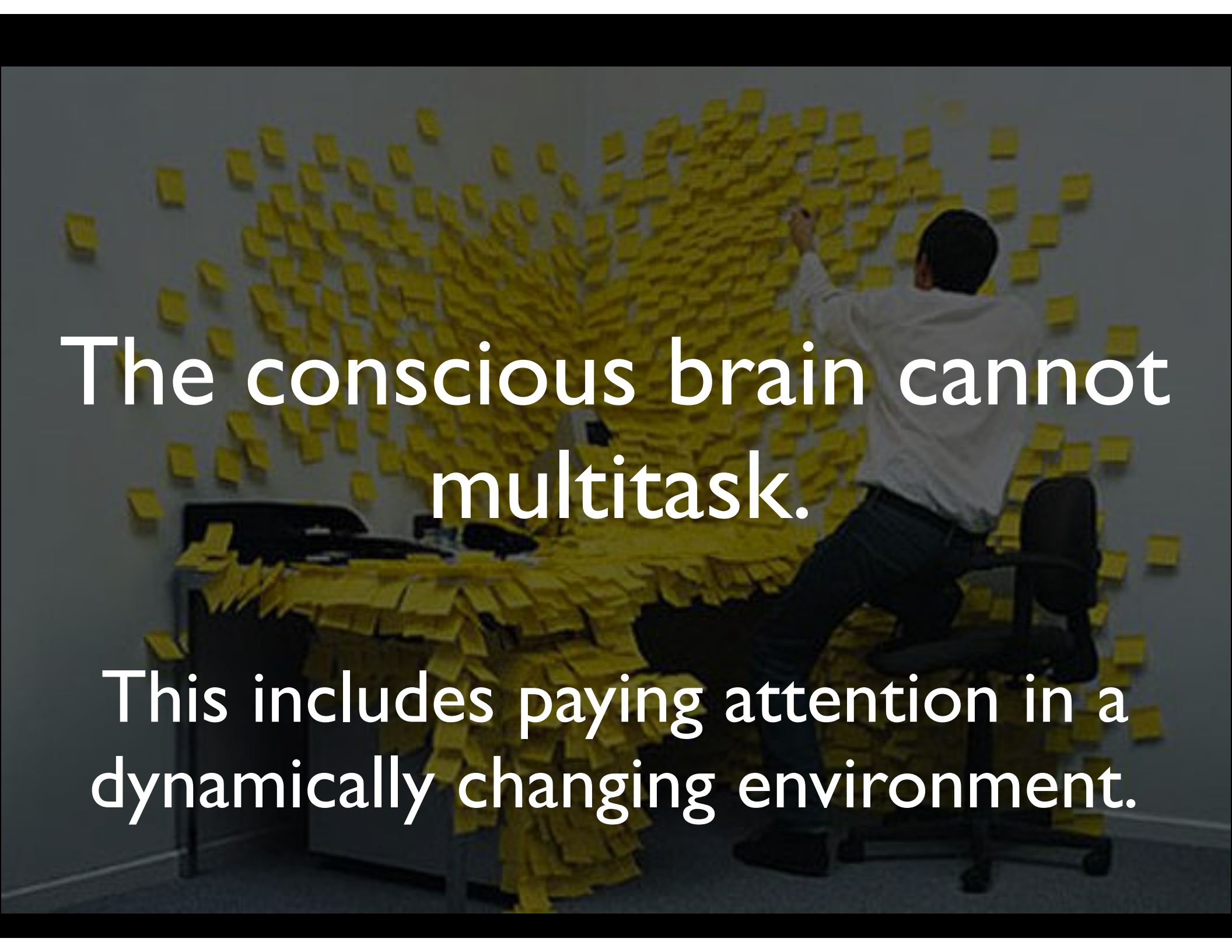
Task Fixation

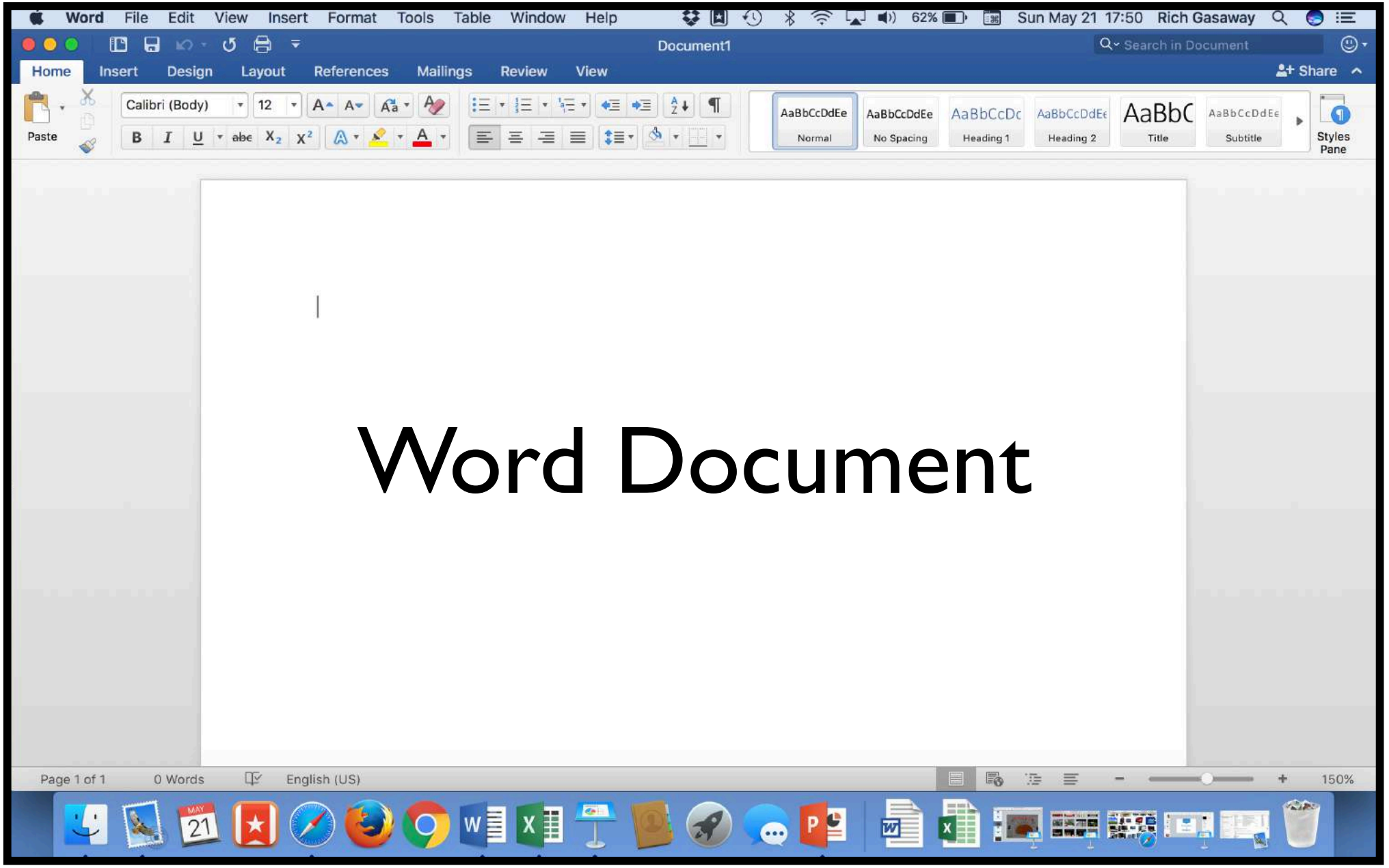
BEWARE!

Task fixation is extremely common.

Practice meta-awareness.

Multitasking


The conscious brain cannot multitask.
This includes paying attention in a dynamically changing environment.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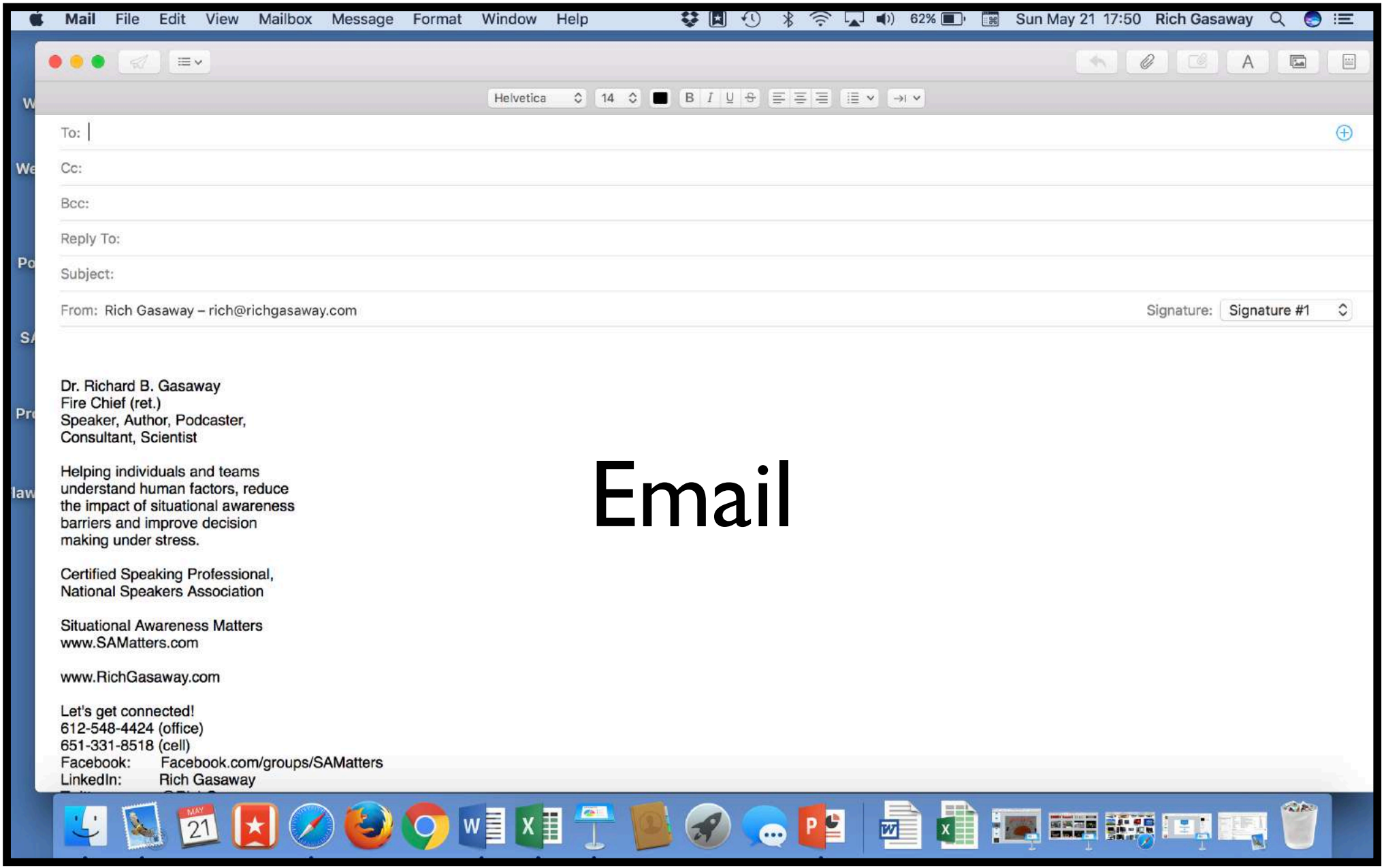
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Signature: Signature #1
Dr. Richard B. Gasaway
Fire Chief (ret.)
Speaker, Author, Podcaster,
Consultant, Scientist
Helping individuals and teams
understand human factors, reduce
the impact of situational awareness
barriers and improve decision
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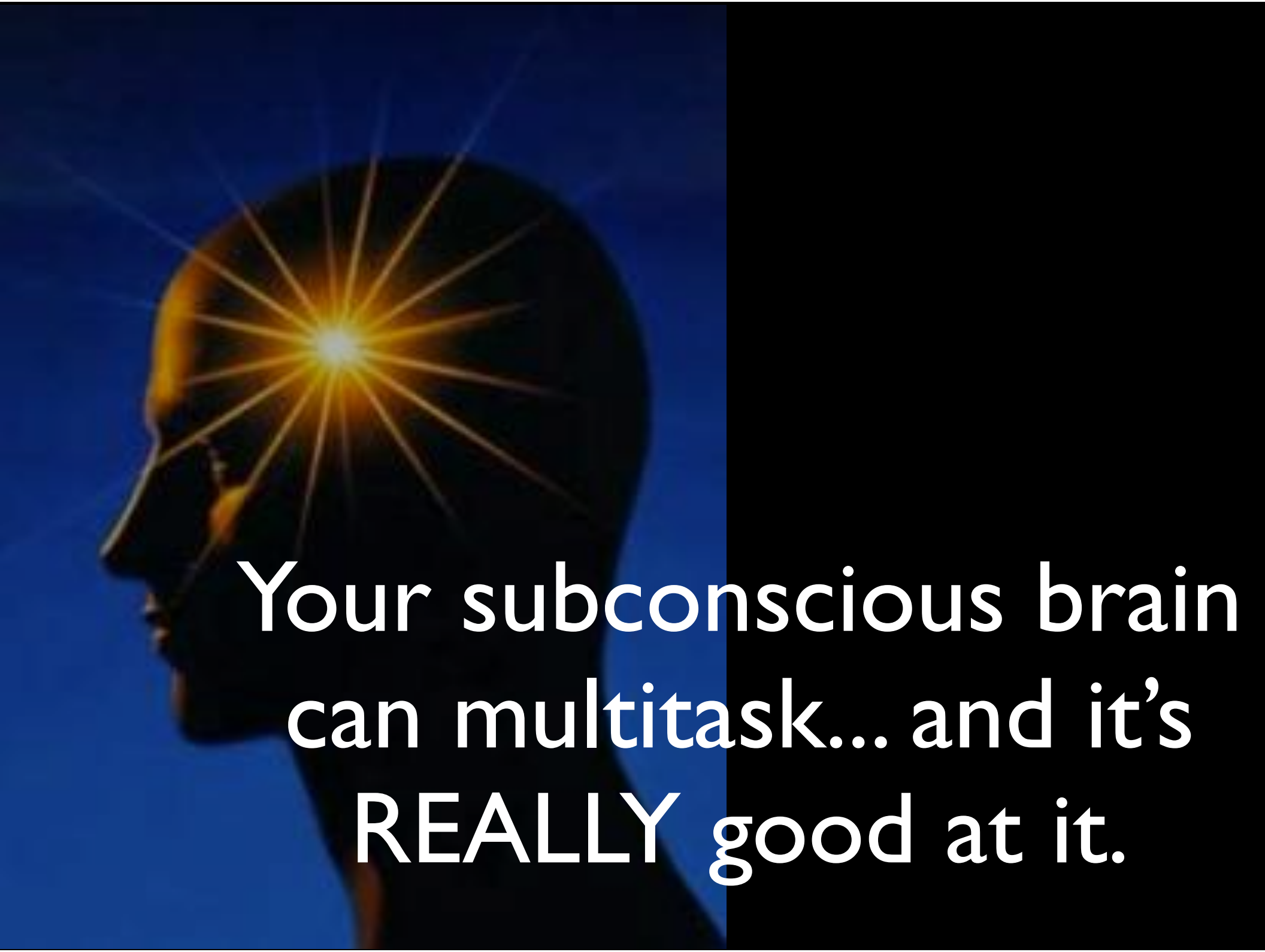
Email

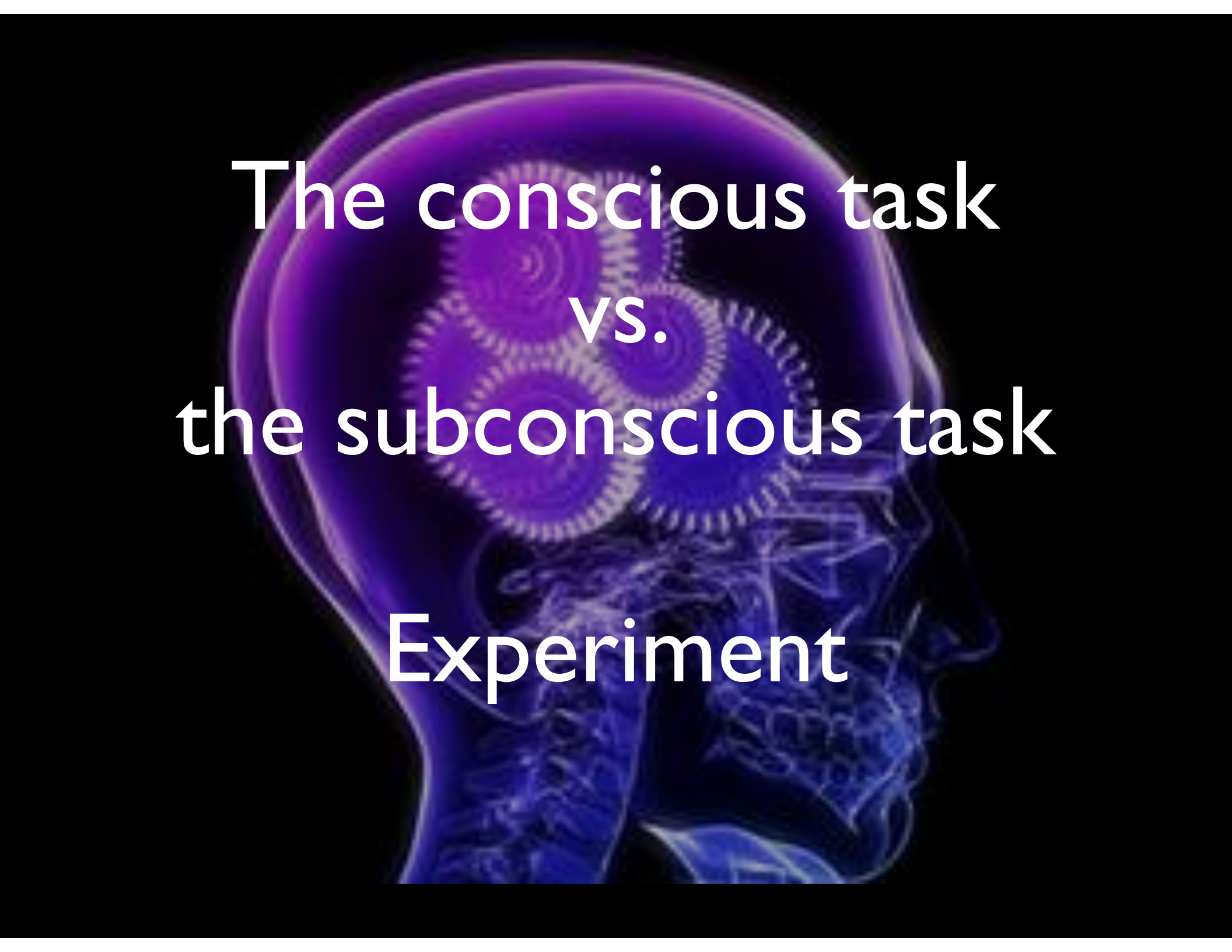
BEWARE!

As attention shifts…
information can be lost.

Prioritize & Delegate

Prioritize & Delegate


Your subconscious brain
can multitask... and it's
REALLY good at it.

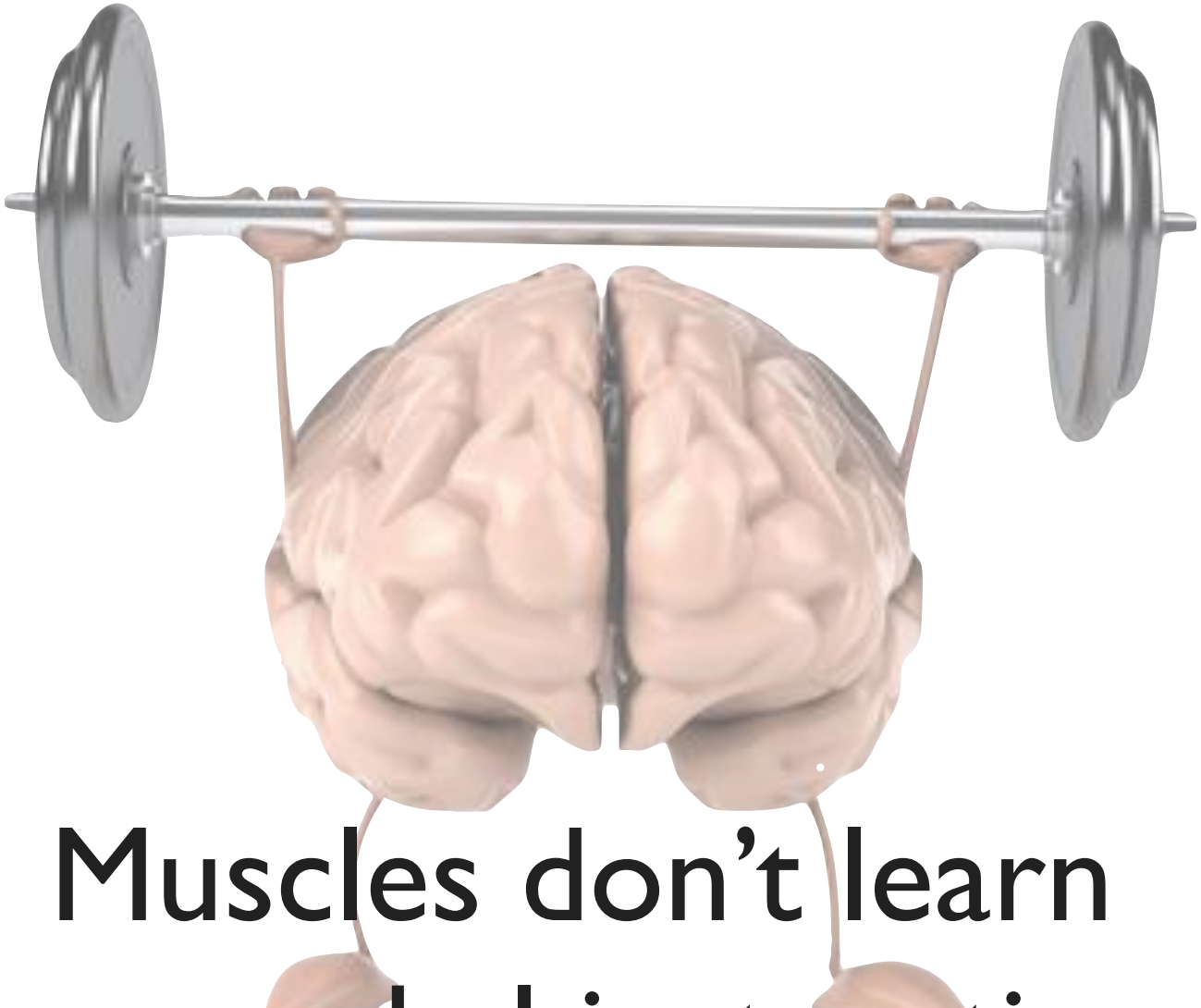

The conscious task
vs.
the subconscious task
Experiment

Automaticity
(robotic action)

BEWARE!

Automatic action is taught and reinforced in our training and culture

Muscles learn from muscle movement.



Muscles don’t learn from verbal instructions.

An example of how training routines, stress & muscle memory can lead to acting without thinking.


FOX 9
XCLUSIVE • FOX 9 EXCLUSIVE • FOX
AMY HOCKERT / KELCEY CARLSON
FOX9
9:00 21°
ACCIDENTAL SHOOTING CAUGHT ON TAPE

My confession…

Patient Care Drill

Scene Safe.

BSI.

Two of the most likely ways a firefighter will die while fighting a house fires?


Flashover

Every firefighter should be concerned about the potential for:

Flashover.


Collapse

Every firefighter should be concerned about the potential for:

Collapse.


Ready? Let's GO!

Go or No Go Decision Making

How to speak-up.

Five-step Assertive Statement Process

1. Address the person by formal title.
2. State "I have a concern."
3. Provide details of the concern.
4. State an alternative course of action.
5. Seek approval to implement the alternate course of action.

Hose line selection

My first training fire.

Vertical ventilation.


Vertical
ventilation.

Vertical ventilation.

Learned behavior

Learned behavior.

Sounding the roof

Collapse/Mayday Training


Blind search

CONSIDER

These behaviors can be changed but it requires understanding how, and a desire to change.

We need to teach and practice decision making.

Every hands-on training evolution should be teaching and practicing:

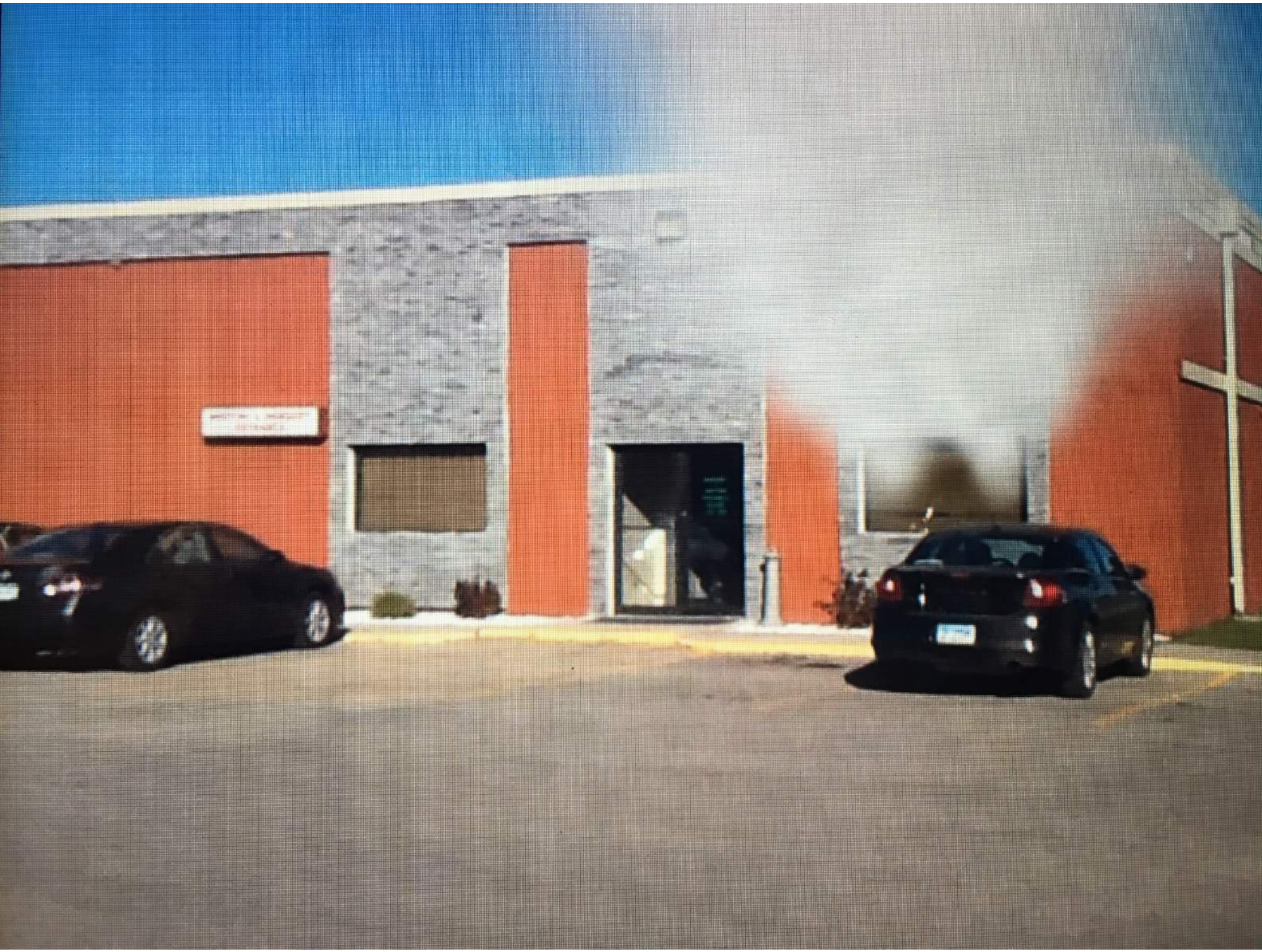
Size-up

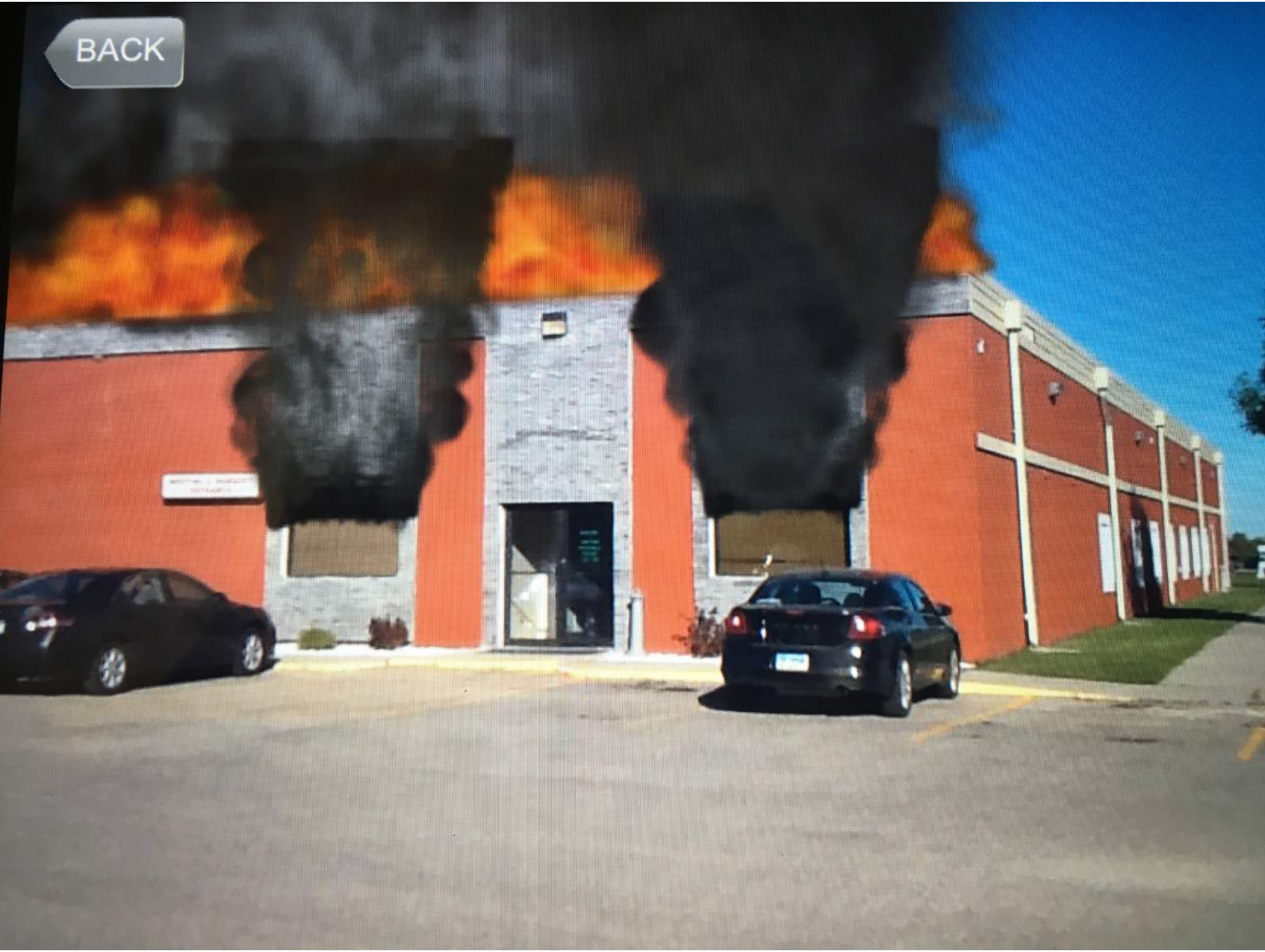
Thinking

Decision making

Hands-on skill practice

Decision making exercise




BACK

Lessons from fatality incidents.


Mistakes

Mistake

1. Performing high-risk activities without proper staffing and equipment.

When firefighters died…

It often happened within 12 minutes of arrival and there were less than eight members on the scene.

Mistake

1. Performing high-risk activities without proper staffing and equipment.

When firefighters died…

It often happened within 12 minutes of arrival and there were less than eight members on the scene.

Mistake

2. The person in-charge performing hands-on activities.

When firefighters died…

The person who was supposed to be in charge was performing firefighting duties instead.

Mistake

3. No one was in-charge.

When firefighters died…

Oftentimes there was no one person in-charge coordinating all of the activities.

Mistake

4. Failing to conduct a 360-degree size-up.

When firefighters died…

The first-arriving crew often failed to completely walk around the structure and missed seeing critical clues.

Mistake

5. Failing to know when to be defensive.

When firefighters died…

Firefighters were often engaged in offensive operations when the strategy should have been defensive operations.

Mistake

6. Trying to fight a large fire without enough water.

When firefighters died…

They often did not have an adequate supply of water or the size of their hose lines were too small to overwhelm the fire.

Mistake

7. Missed communications or misunderstood communications.

When firefighters died…

Often times their updates and maydays were not heard the first time communicated or their communications were misunderstood.

Mistake

8. No Standard Operating Procedures (SOPs) or Standard Operating Guidelines (SOGs).

When firefighters died…

Many times the department did not have a common set of procedures to guide operations. They had no play book. They were flying by the seats of their pants.

Mistake

9. Short cuts in training.

When firefighters died…

It was often attributed to inadequate training or the department officers had taken shortcuts when leading training sessions.

Mistake

10. Failing to learn from near-misses and injury events (error creep).

When firefighters died…

The catastrophe was linked to persistent mistakes the department had been making for a long period of time (and were getting away with it).


Best Practice
Straight Ahead

Best Practice

1. Ensure you have the proper amount of help responding immediately to the call.

Implement an automatic aid program – ensuring you have 15-25 firefighters responding to structure fires (immediately), 24-hours-a-day.

Best Practice

2. The person in-charge should remain far enough back from the action to maintain a big-picture view of the incident.

Command from a vehicle or from a location remote enough to see the big picture scene.

Best Practice

3. Conduct a complete size-up to ensure an understanding of what is happening.

Walk all the way around
the building and look
for cues and clues that
tell you what is happening.

Best Practice

4. Match the strategy and tactics based on the size of the enemy. Overwhelm the fire.

Big fires require large hose lines and lots of water. Don't fight big fires like you fight the small fires.

Best Practice

5. Train firefighters to conduct a risk-benefit assessment.

Not every fire is an interior attack fire.

Sometimes victims are not savable.

Discuss and practice (in advance) “No Go” scenarios.

Best Practice

6. Have a clearly defined commander & aide.

One person in-charge

Supported by an aide

Hands off

With command presence

Setting strategy

Making decisions

Coordinating actions.

Best Practice

7. Develop and use common radio terminology and radio discipline.

Communications must
be clear, concise,
commonly understood,
controlled… and practiced!

Full communications loop!

Best Practice

8. Conduct your training based on Standard Operating Procedures (SOPs) / Standard Operating Guidelines (SOGs).

Training should be based on a game plan.

Train with mutual aid partners.

Best Practice

9. Conduct training that is realistic and repetitive.

Training should be as
real as safely possible
and repetitive to build
brain and muscle memory.

Best Practice

10. Perform pre-incident and post-incident evaluations.

Correct flaws before
they turn into catastrophes.

Even when things go well (no injuries), there are opportunities to learn from minor mistakes.

7 SA Lessons

1. You can have poor SA can still have good outcomes... if only by luck.
2. You can have great SA can still have a bad outcomes.
3. Stress can challenge your SA.
4. What you should be paying attention to… is NOT always intuitive or obvious.
5. Under stress, you can only hold about 5-7 pieces of unrelated pieces of information in your short-term (working) memory.
6. Your attention is drawn to things that are perceived as threatening.
7. You will rarely realize you're losing your SA... until it's too late - making it a stealth killer.

5 common SA mistakes:

1. Failing to process the meaning of critical information.
   - For example: Not reading the smoke or the building properly.
2. Underestimating the speed of the incident.
3. Overestimating the abilities of crews.
4. Feeling pressured to take “heroic” actions without conducting a risk-benefit assessment.

5 common SA mistakes:

1. Failing to process the meaning of critical of the clues and cues.
2. Underestimating the speed of the incident.
3. Overestimating the abilities of their crews.
4. Feeling pressured to take “heroic” actions without conducting a risk-benefit assessment.
5. Fixating on the wrong information or trying to process too much information.

SA Best Practices

1. Prioritize incoming information.
   - Smoke (fire) condition.
   - Construction / decomposition of structure.
   - Speed the incident is moving.
   - Realistic assessment of savable lives.

2. Set strategy and tactics based on the quality and quantity of staffing.
   - Conduct a 360 degree size-up.
     - Size-up must be on-going.
   - Do not lock on to a strategy or tactics until adequate help arrives.
   - Consider the risk to your personnel versus the benefit of their actions.

SA Best Practices

3. Ensure the commander stays focused on the big picture incident.
   - Command from a vehicle or a remote location but maintain a visual fix on the incident.

4. Ensure commanders remain “hands off”.
   - You cannot effectively command while performing firefighting duties.

5. Never miss the communications from the most at-risk companies.
   - You cannot effectively listen to, and comprehend, multiple conversations simultaneously.
   - The stimulus closest to you will occupy your attention.

SA Best Practices

6. Control distractions and interruptions.

- Call a personal time out
- Avoid being a high-profile target

7. Use a command team.

- Fight fires in teams. Command in teams.
- Command Advisors, aides.
- Use worksheets and checklists

8. Establish and maintain a strong command presence.

- Control your emotions (excitement, frustration, anger, ego).
- Direct your crews (no freelancing)
- Be clear and concise with your orders.
- Keep track of your people and what they are doing.
- Keep track of the passage of time.
- Practice “meta-awareness.”

SA Best Practices

9. Develop expert knowledge

- Habits and routines:
  - Conduct training that is realistic.
  - Train in repetition.
  - The brain can be “tricked” using simulation.
  - Create realistic incident simulations (with stress).

(Captain Sullenberger’s Interview…)

SA Best Practices

9. Accelerate command knowledge and expertise.

- Develop habits and routines:
  - Training that is realistic and repetitive.
  - Realistic incident simulations.
- Pre-load your experiences:
  - Near-Miss Reports.
  - Case Studies.
  - LODD Reports.
- Reinforce best practices & learn from mistakes
  - Mentorship program.
  - Post-incident evaluations.

SA Best Practices

10. Conduct a pre-incident safety assessment to identify and correct error creep.

- Independent evaluation:
  - Operations
  - Training
  - Policies and procedures
  - Equipment
  - Communications
  - Inspections
  - Hiring and promotional practices
  - Organizational culture

Handout

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SITUATIONAL AWARENESS MATTERS!

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Helping you see the bad things coming...
in time to avoid bad outcomes.