



What Safety Can Learn From Neuroscience

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SafeStart



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CORRECTIVE ACTIONS FOR MISTAKES AT WORK WITH **SAFETY CONSEQUENCES**

- Re-induct
- Re-train
- Re-familiarise person with paperwork
- Counselling
- Discipline
- Tell them to be 'more careful' or 'pay more attention' next time



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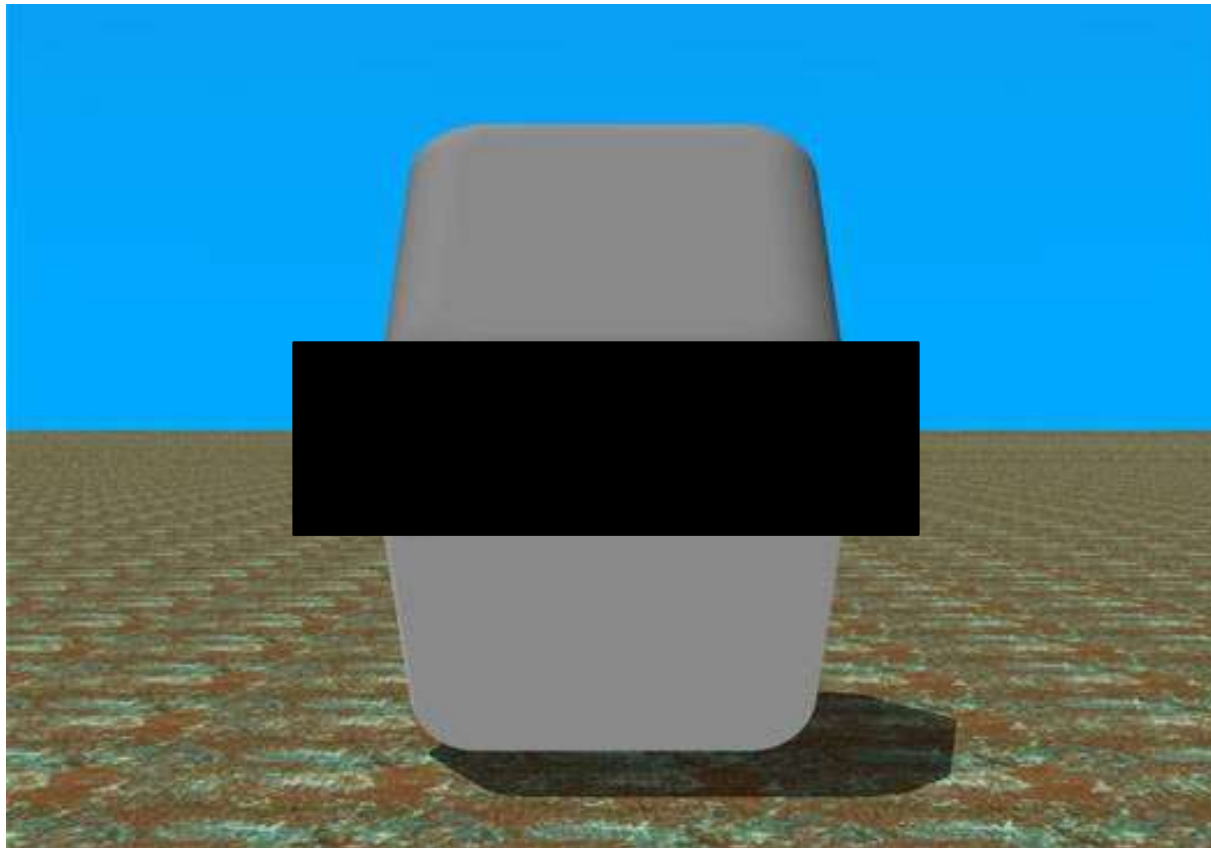
Do we see the world as it is
OR as we perceive it to be?



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TOP & BOTTOM – DO THE COLOURS LOOK THE SAME OR DIFFERENT?



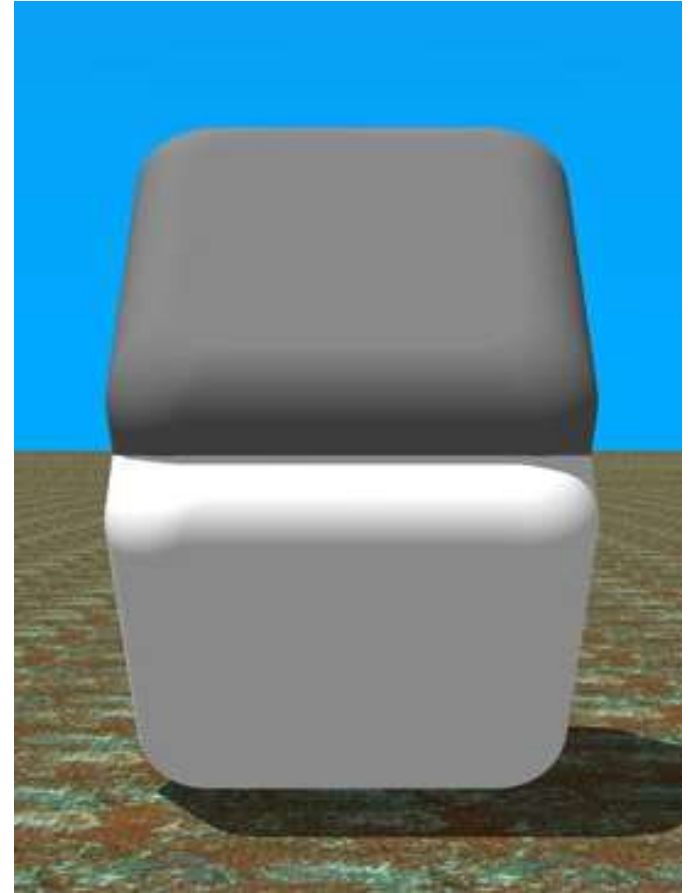
IT'S AS THOUGH WE HAVE **LEARNT NOTHING**

There is no way for us not to see the illusion – it happens automatically.

Seeing is one of the best things we do as we do more of it than anything else.

More of our neurons are dedicated to vision than all of our other senses combined.

If we make these mistakes with vision & don't realise it - what are the chances we also make mistakes with other aspects of our lives but don't realise it either?



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THE WORLD WE SEE IS NOT OBJECTIVE

We perceive it.

What we think we see is separate from the data that comes in through our eyes.

The mind constructs what we see by employing context, prior knowledge, belief & (sometimes) even desire.

This is not just the case with vision & other senses, it also applies to other aspects of life like attention, knowledge, memory & confidence.

BACK TO BASICS: THE LAWS OF PHYSICS



**At-Risk
Condition
(Hazard)**



**At-Risk
Action**



Injury



these critical errors ...

- ☐ Eyes not on Task
- ☐ Mind not on Task
- ☐ Line-of-Fire
- ☐ Balance/Traction/Grip

*...which increase the
risk of injury.*

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so many injuries



These four states...

- ☐ Rushing
- ☐ Frustration
- ☐ Fatigue
- ☐ Complacency

can cause or contribute to these critical errors ...

- ☐ Eyes not on Task
- ☐ Mind not on Task
- ☐ Line-of-Fire
- ☐ Balance/Traction/Grip

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**Attention
“Disruptors”**

**Potential
Consequences for
Safety**

**Mistakes That
Result In
Inattention**

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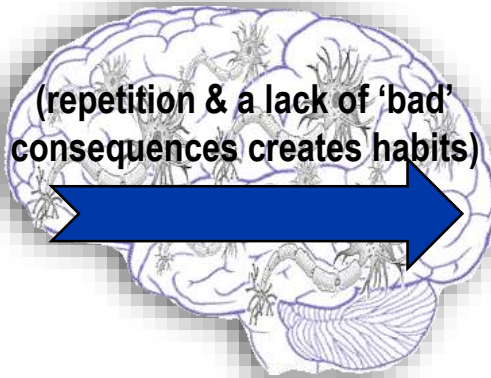




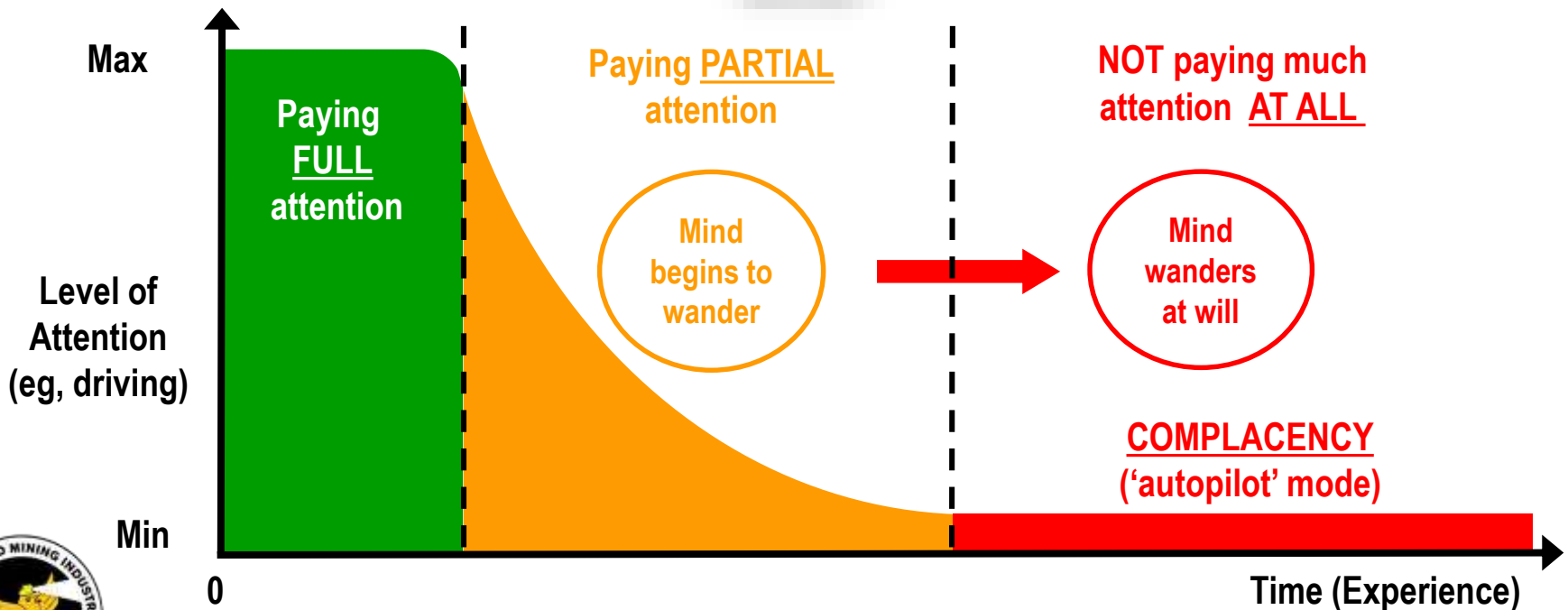
UNDERSTANDING COMPLACENCY

CONSCIOUS
ACTIONS
(‘front of mind’)

(repetition & a lack of ‘bad’
consequences creates habits)



SUBCONSCIOUS
ACTIONS
(‘back of mind’) Creatures
of habit.



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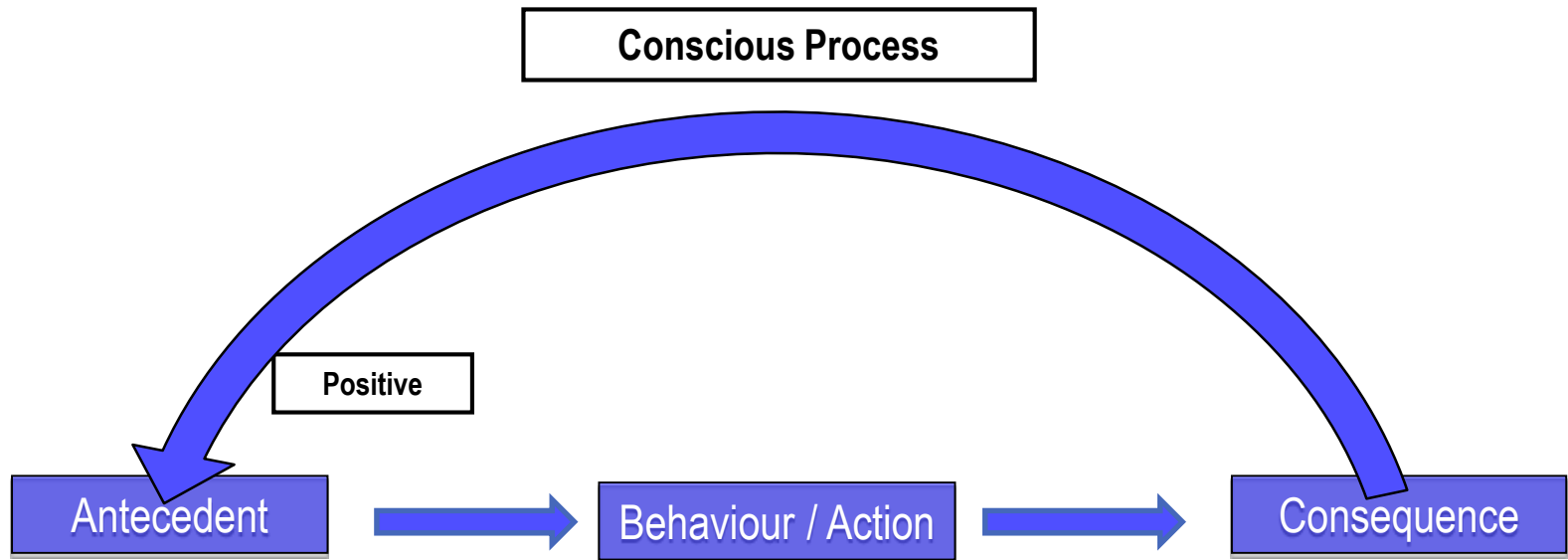
CONSCIOUS OR SUBCONSCIOUS?



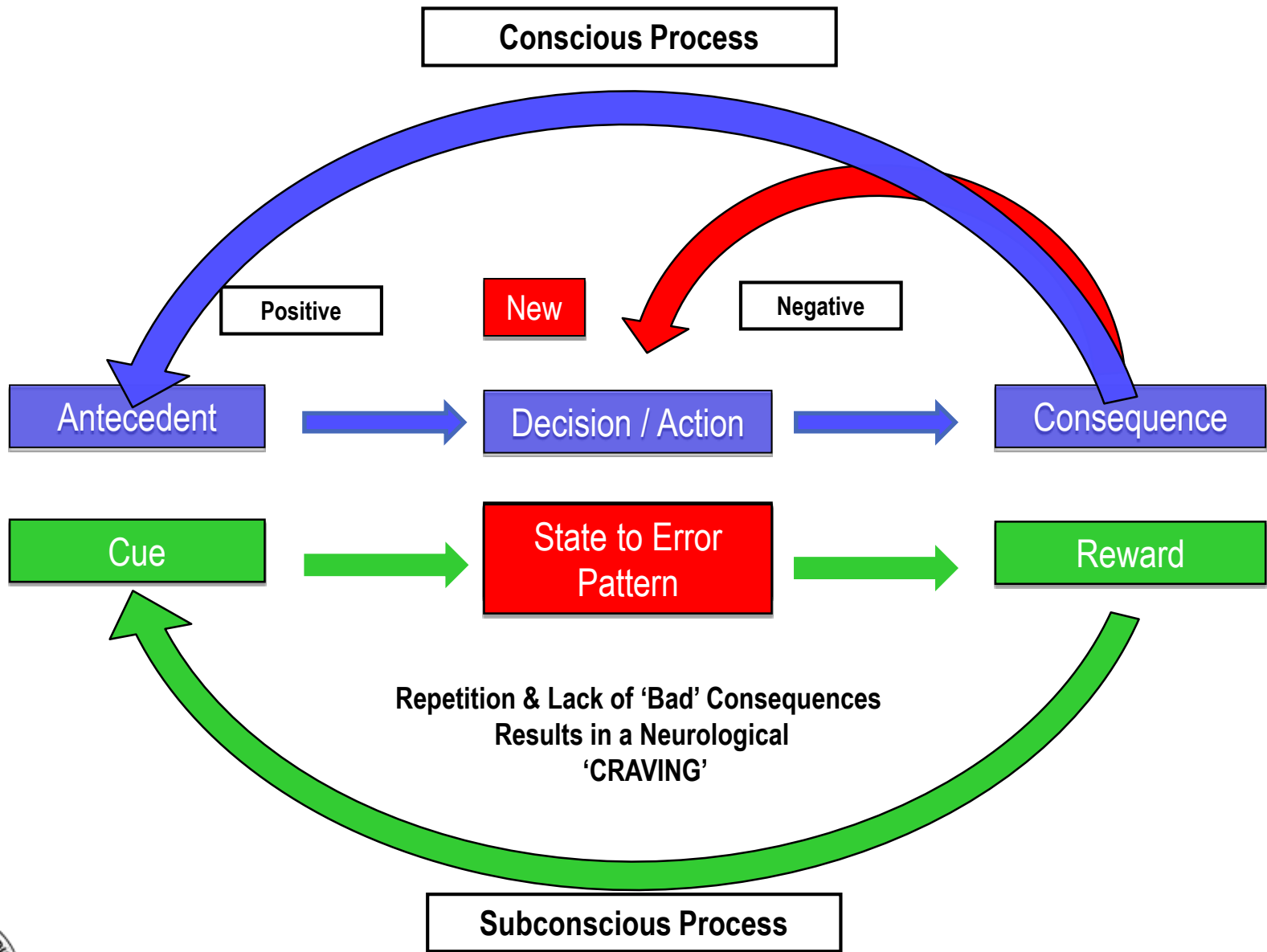
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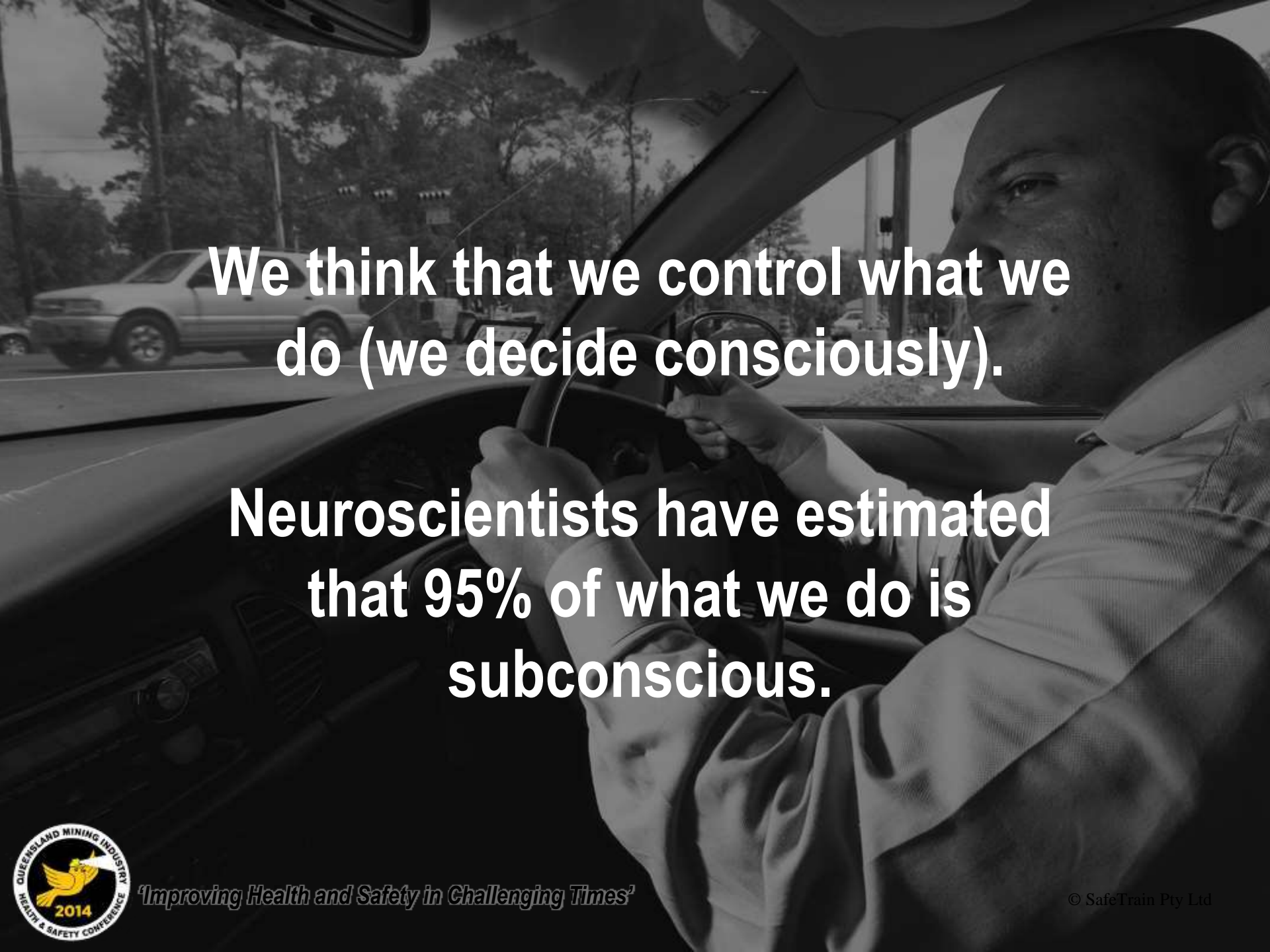
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WHY DO PEOPLE DO THIS?

- Because they don't know it is dangerous?
- Because they don't know it is illegal?
- Having the ability to make a conscious decision is very different from making one when it counts
- Become increasingly comfortable with driving
 - the repetition & a lack of 'bad' consequences dissipates the fear & complacency takes over
 - move from conscious to subconscious over time





**We think that we control what we
do (we decide consciously).**

**Neuroscientists have estimated
that 95% of what we do is
subconscious.**



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WHY IS IT IMPORTANT TO UNDERSTAND AND IMPROVE WHAT WE DO SUBCONSCIOUSLY?

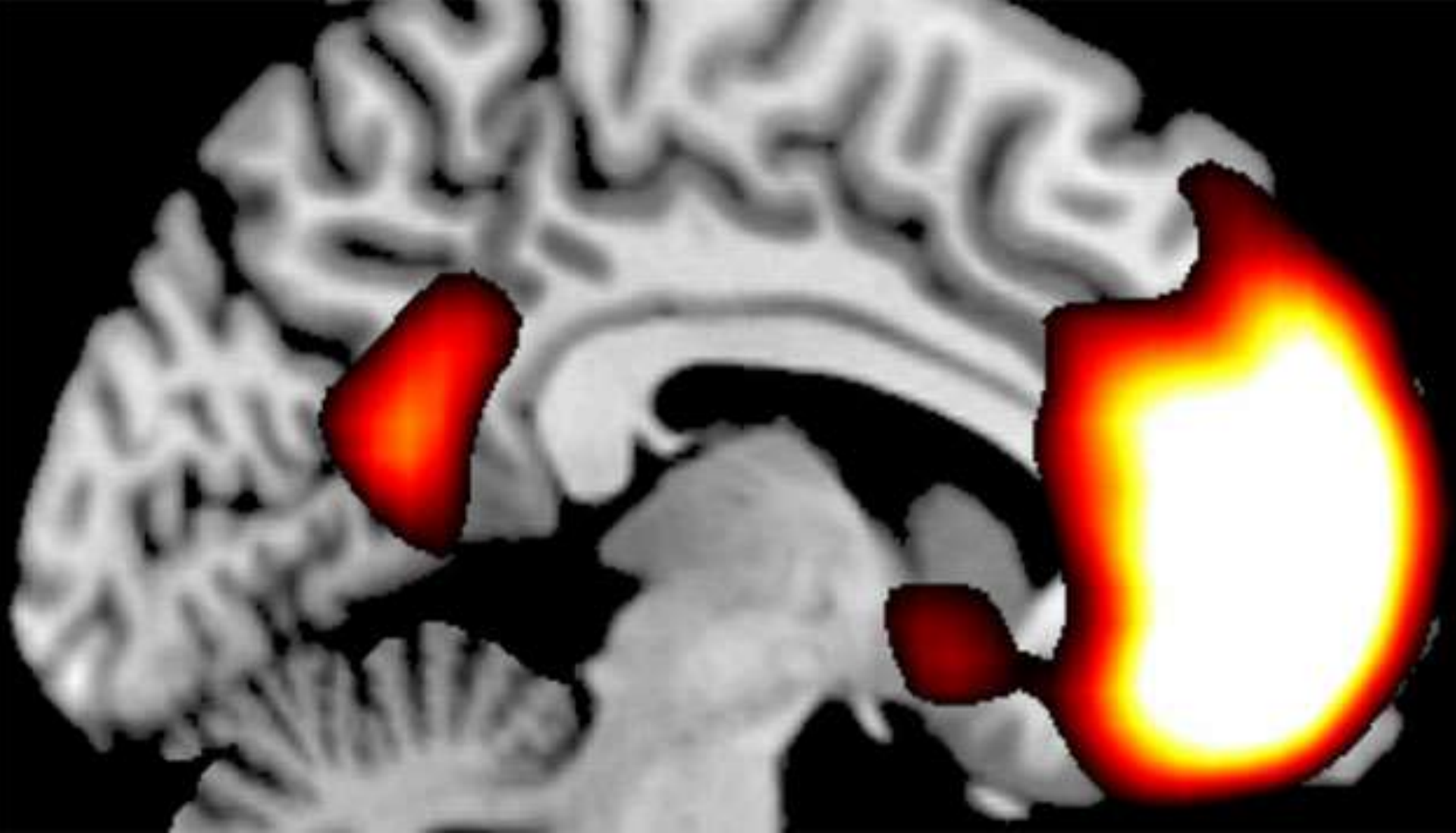
**Human Factors in Queensland
Mining Project
(Clemson Uni., Feb 2009):-**

- concluded that “human error leading to an unsafe act was an underlying cause of 95% of accidents”

Understanding the difference between the conscious mind & the subconscious mind allows us to improve how we react to situations that are not the safest.



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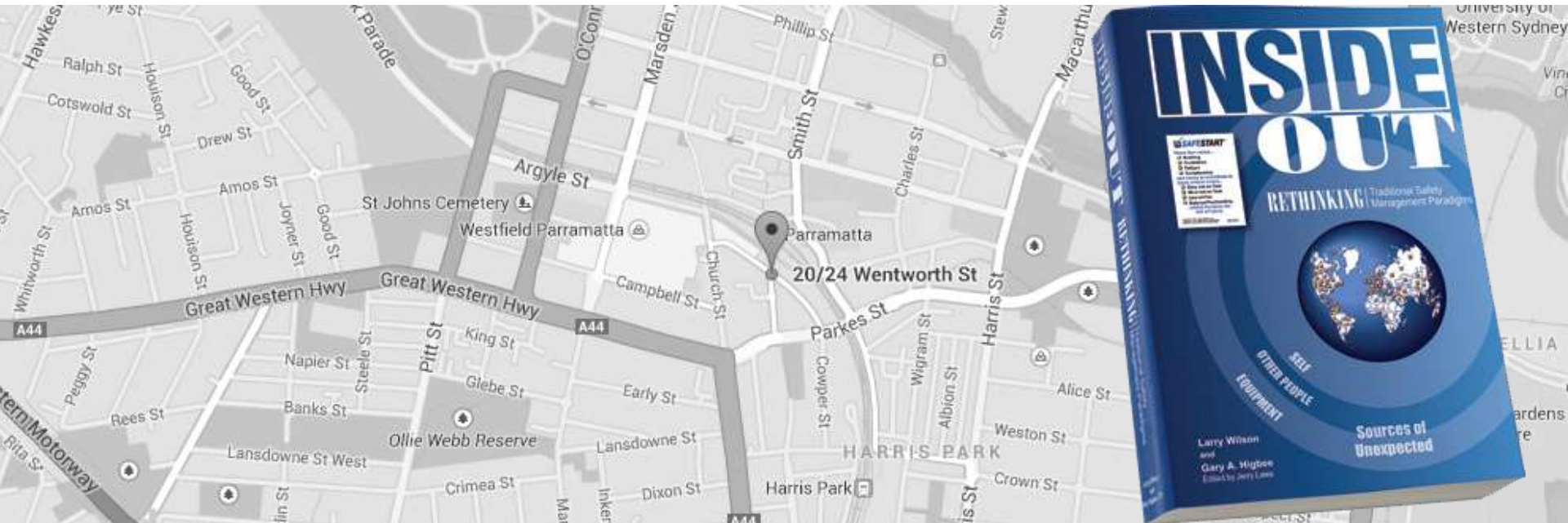
DAY DREAMING **BRAIN**



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QUESTIONS?



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