Canadian Society of Safety Engineering
Professional Development Day
May 9 2019

REACTING WHEN THINGS GO WRONGLY

AND HOW TO IMPROVE WITHOUT POOR OUTCOMES

Tanya Hewitt, PhD

Outline

Part 1 - Where we are

- Headlines and review of them
- Typical reaction to when things go badly
- Problems with this reaction
- Analyzing the reaction
  - Individual
  - Organizational

Part 2 - Where we should be going

- A different way to react
- Some tools to help with this different way to react

Part 1 - Where we are

OTTAWA CITIZEN

NEWS | OPINION | BUSINESS | ARTS | SPORTS | LIFE | CAREERS | OBITS | CLASSIF

NEWS | LOCAL NEWS | CITY HALL BLOG | FEATURED: | DEFENCE WATCH | SENATORS EXTRA | WORLD NEWS | FOC

Bus driver in Friday's crash alleged to

CRIME May 1, 2019 10:24 am Updated: May 1, 2019 10:29 am

Charges laid in crash that killed woman on Highway 4 south of Battleford, Sask.

By David Giles

Senior Web Producer Global News

Facebook Twitter E

"I would have loved to see someone go to jail, even if it was just for a year, house arrest. I would have loved to see someone pay," Kristian said.

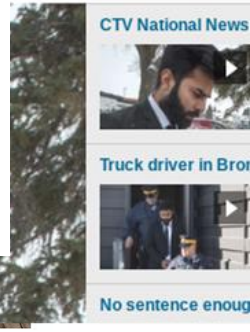
Air Canada Pilots Are Officially To Blame For Almost Causing "The Worst Aviation Disaster In History" (VIDEO)

The incident took place in San Fransisco last year.

Elizabeth Keith · 7 months ago · Updated on September 26 @ 09:35 AM · 276

nembering to replace your EpiPen® isn't always easy...
signing up for the EpiPen® Expiration Reminder Service is.

ed to 8 years



Driver error to blame for yogurt truck crash: OPP | CP24.com

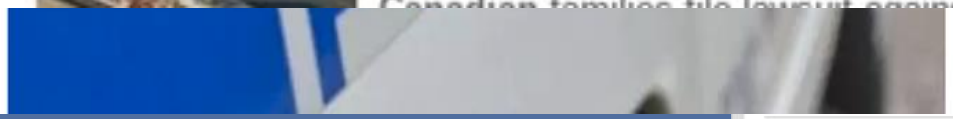
https://www.cp24.com/video?clipId=1424175

6 days ago

News

Pilot Error blamed for CF-18 Crash that claimed the life of Pilot Outside Cold Lake

April 10, 2018 Press Release 4-Wing Cold Lake, Captain Thomas McQueen, cold lake



Headline review

- All headlines indicated an undesirable outcome
- All undesirable outcomes were due to an identified person's fault
- Most headlines reported on the consequences for the guilty person's actions

Headline review

- All Stories were Canadian

- All stories were in the last year (2018-2019)

This is happening HERE and NOW

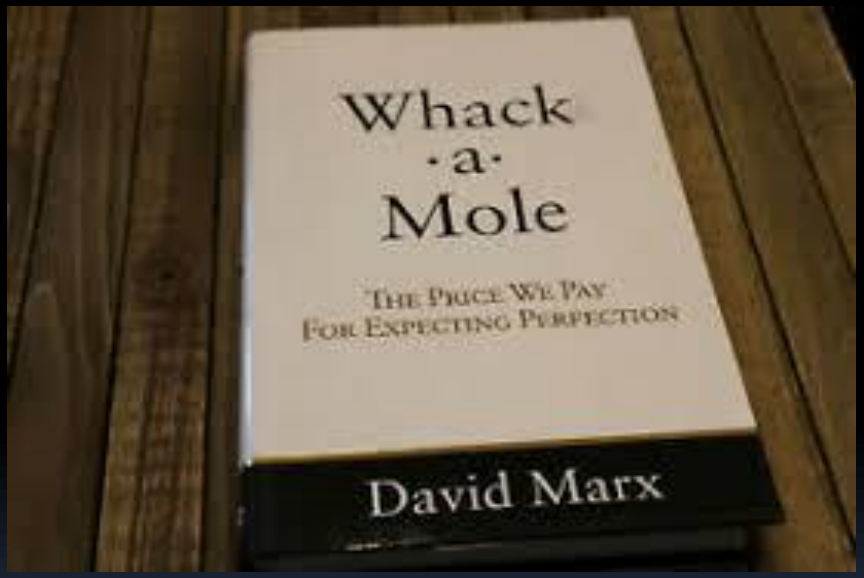
Likely reaction when things go wrongly

Questions :

1. What happened - what went wrong?
2. Who is responsible?
3. How severe was the outcome?

Typical approach

Adult version of Whack-a-Mole



"It's a game that costs us dearly. We're all poised to pounce, caught up in the adult version of Whack-A-Mole, with the media all too willing to help swing the hammer even before the investigation has started. Bad outcome must mean bad actor. Whack that bad actor and the game is won" (Marx, p 2)

Courts and Workplaces

Sidney Dekker

https://theconversation.com/profiles/sidney-dekker-119258

Concept	Court	Workplace
Knowledge of infraction	Formal charge	Accusation
Representation	Lawyer (expertise)	N/A (often guilt is assumed)
Independent decision maker	Judge (expertise)	N/A (Employer is not independent)
Appeal	Process (separate court)	Does not exist

WORKPLACES ARE NOT COURTROOMS

Problems with the typical approach - 1

Find out what went wrong

- Broken parts - linear, mechanistic, “down and in”
- Oversimplifies reality
- All accidents are multi-factorial - using a linear “broken part” understanding neglects the messiness of reality - for full understanding go “up and out”

Problems with the typical approach -2

"Name, Blame, Retrain"

Focus on the worker (most proximal to the event – at the sharp end) and their "choices"- 2 issues

1. The local rationality principle states that workers do what makes sense to them in the context in which they find themselves
2. The fundamental attribution error - The tendency for observers to underestimate situational influences and overestimate dispositional influences upon others' behaviour

Problems with the typical approach - 3

More severe the outcome - more severe the error

- Newton's 3rd law - for every action there is an equal and opposite reaction
  - Accurate description of classical mechanics
  - Not applicable to social situations (people)
- Success and failure have the same antecedents

Some other consequences of the typical approach

- Invokes the stop rule too early
  - Satisfied with finding a guilty party, irrespective of context that could give rise to another accident – does not prevent recurrence
- Gets rid of good people
  - Many times those who are at the sharp end of accidents are model employees
- Suppresses reporting
  - A culture of silence in a workplace can follow a firing for an accident
- Promotes an outdated understanding
  - Does not take into account the modern complexity of work

More important choice in the face of something going wrongly

- We can

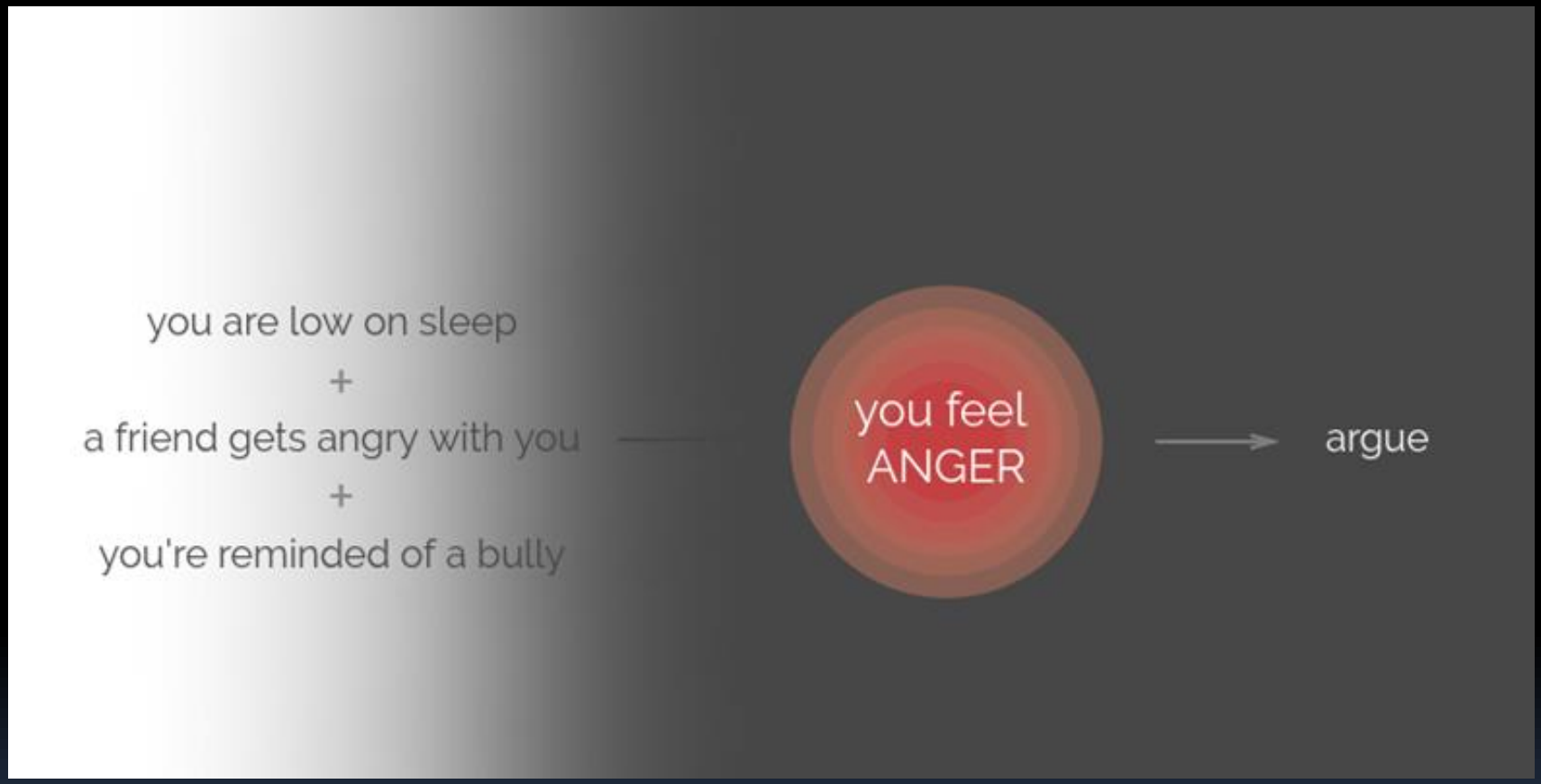
Get Better
OR
Get Even*

*Emotional cathartic release

Atlas of Emotions

Trigger Experience Response

Atlas of Emotions



Trigger = CONTEXT

Experience

Response

Atlas of Emotions

Trigger = CONTEXT

Experience = CONSEQUENCE

Response

Experience - Consequence

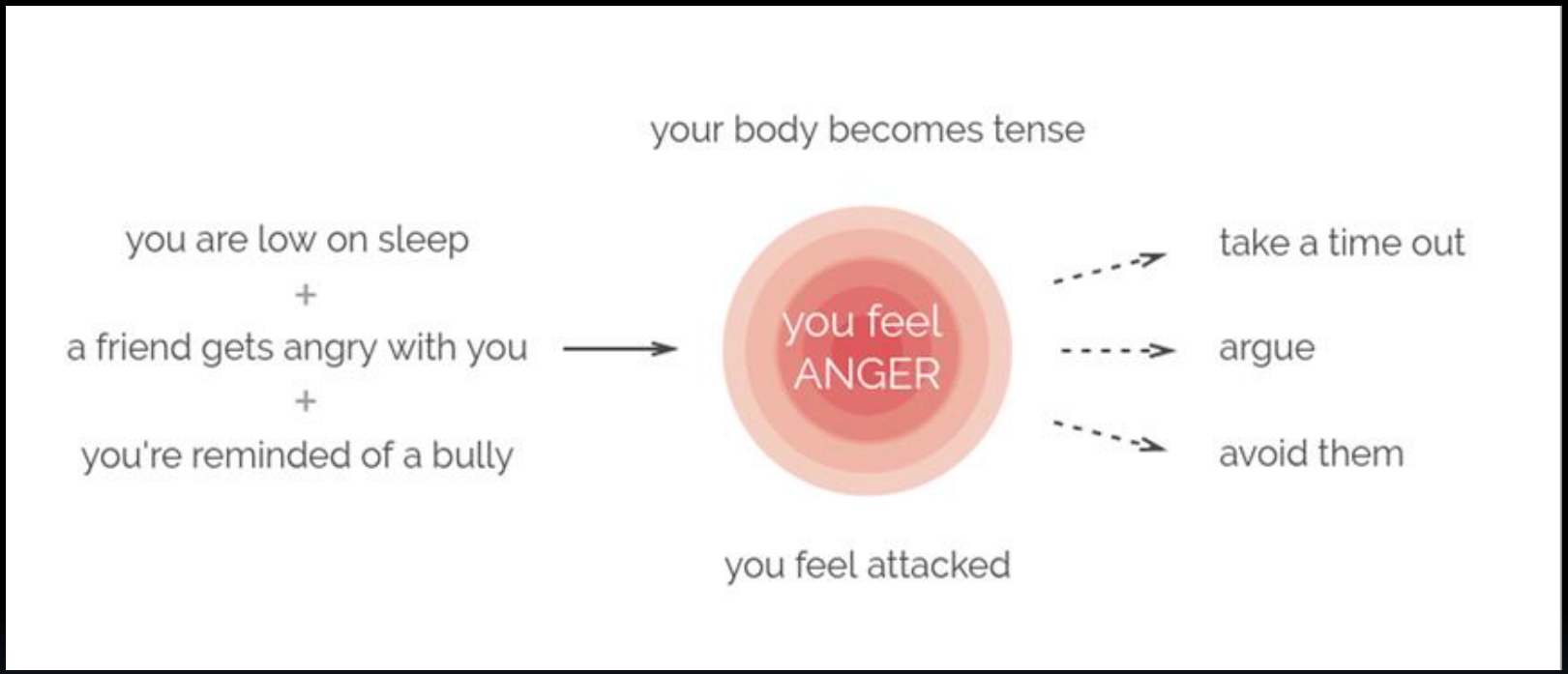
- The trigger will elicit an emotion
- Emotions are biochemicals
- The biochemicals flood our brains for 6 seconds after a trigger

Experience - Consequence

- During those 6 seconds
  - Biochemistry dominates
  - Rational deliberate thought is not possible

WE ARE NOT IN CONTROL

Atlas of Emotions



Trigger = CONTEXT

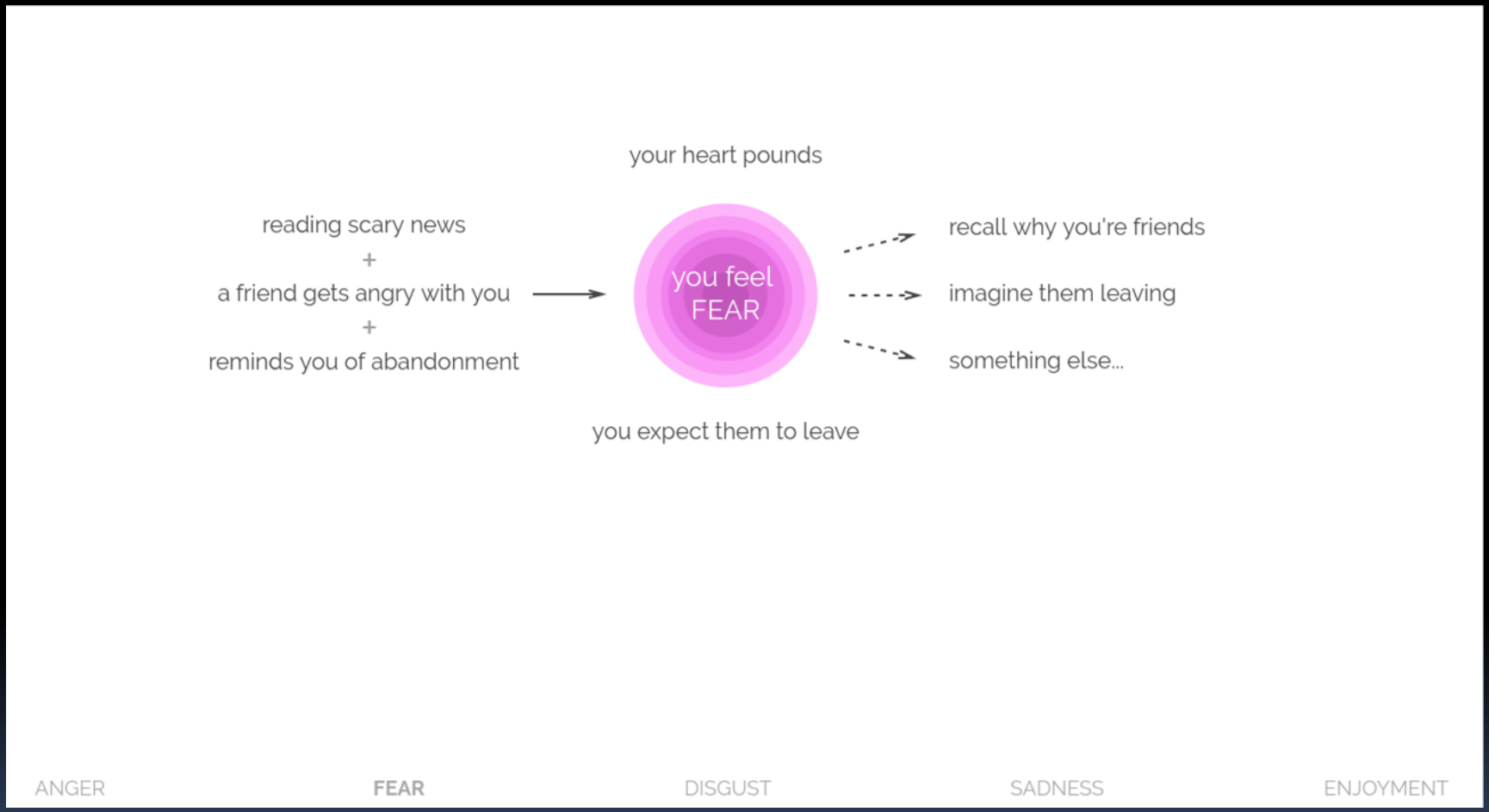
Experience = CONSEQUENCE

Response

Response

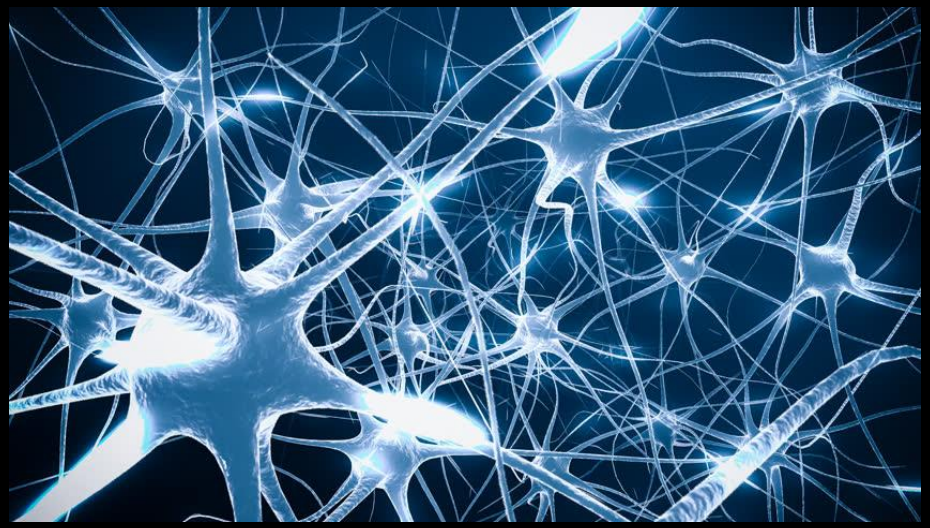
- The ability to select a response depends upon a rational approach to decision making
  - Not possible 6 seconds after the trigger has elicited an emotion
- Best antidote - wait 6 seconds after feeling intense emotion before reacting

Atlas of Emotions



Site goes on to analyze different reactions as constructive, destructive or ambiguous

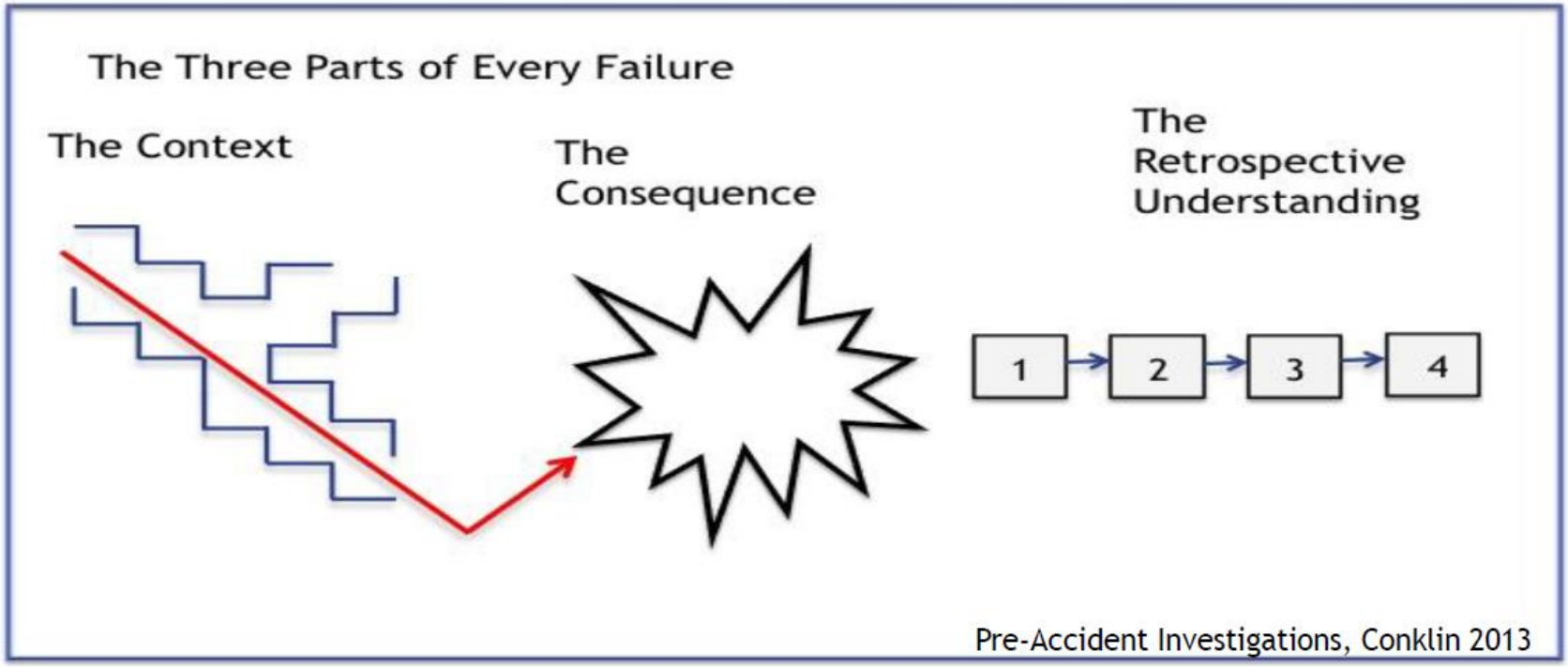
Response & neural networks



https://www.shutterstock.com/video/clip-27028492-neurons-brain-loop-3d-animation-neural-network

- Neuroplasticity allows the brain to establish different neural networks throughout the lifecourse
- Reacting the same way to a trigger will help reinforce a neural network

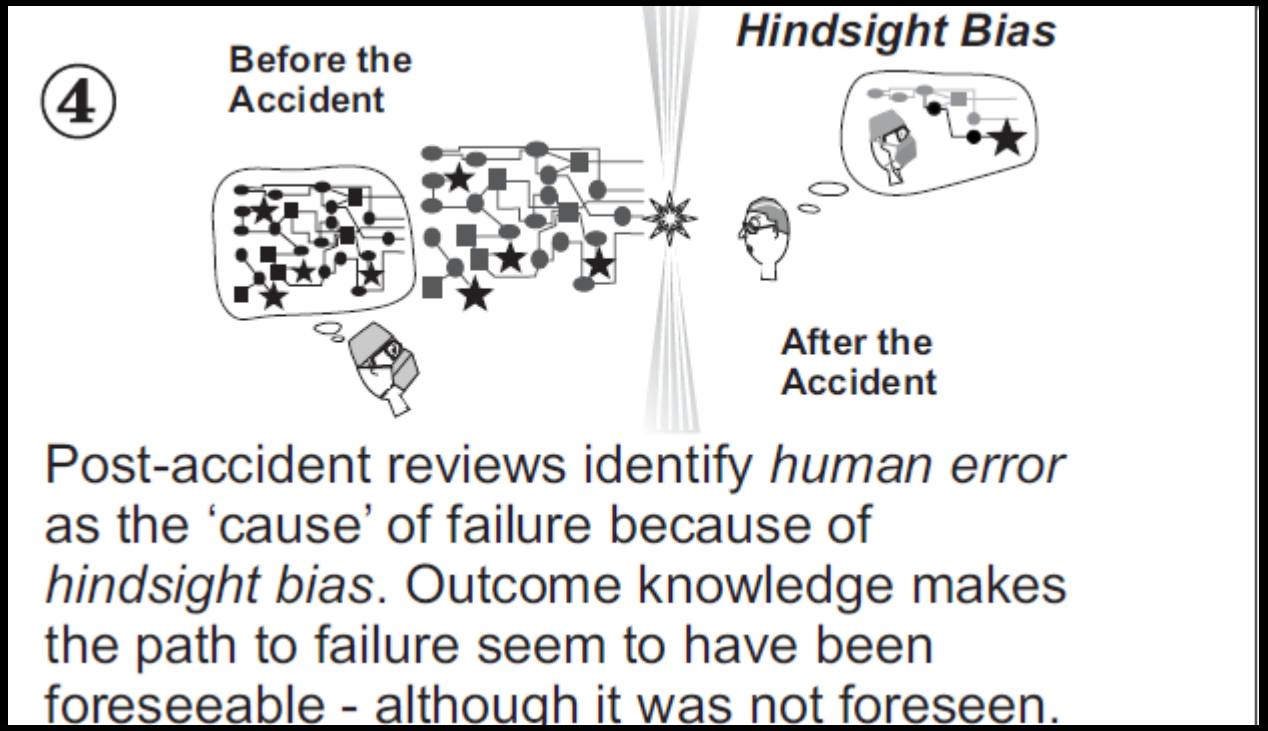
An analysis of failure



3 Parts of an Event

Conklin

Retrospective understanding



Counterfactuals and Hindsight Bias allow outsiders to *construct a version* of how the accident happened

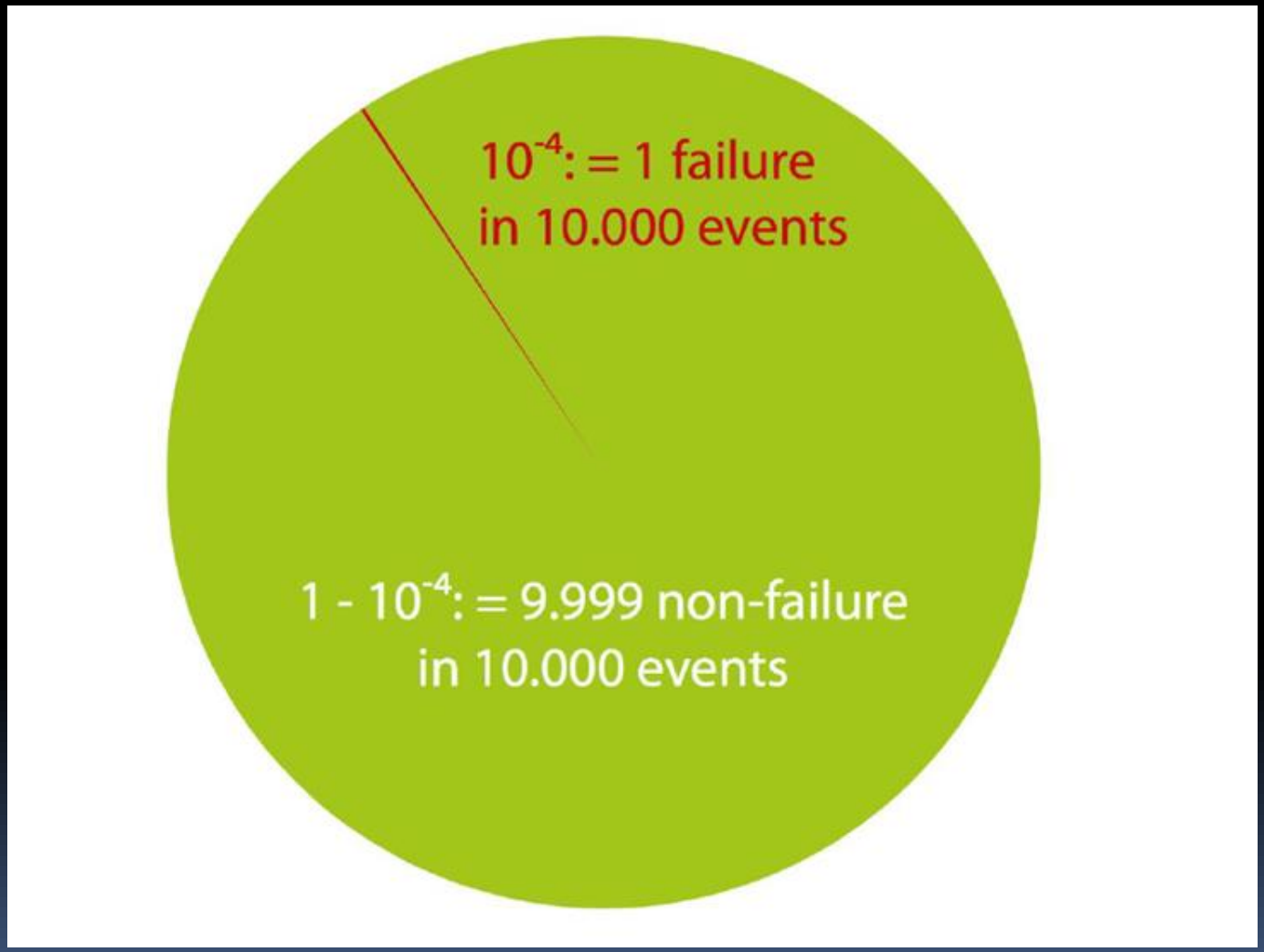
Part 2 - Where we should be going

A different way to react

Ask questions such as

- What is happening when nothing bad is happening?
- What do we know about work as done?
- Are we a learning organization?

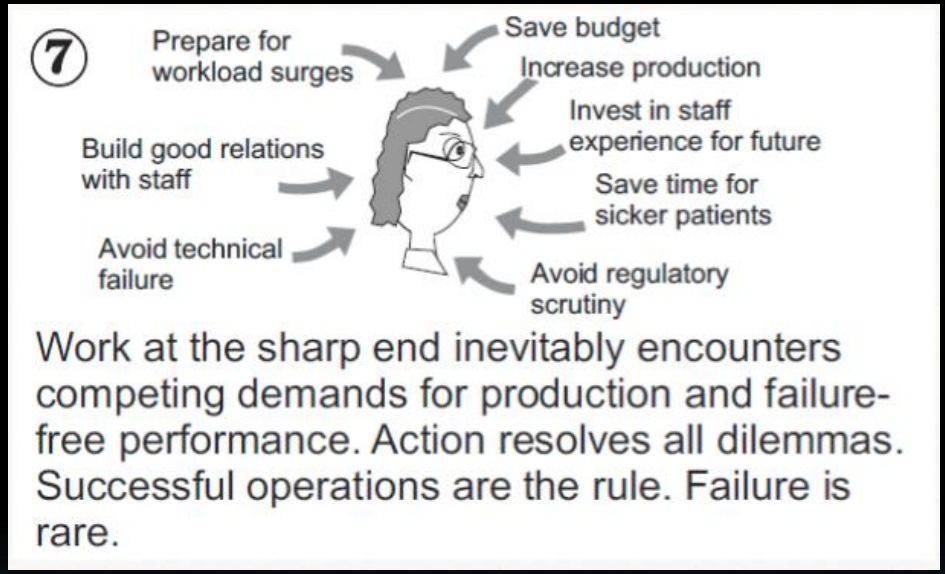
What data we look at



Normal work is ignored

Performance variability is a given

- In normal work , there are always goal conflicts (e.g. time, resources, quality, quantity)
- Workers at the front line (sharp end) are constantly engaged in trade-offs to deal with the inherent goal conflicts



Performance variability and Error

- Todd Conklin's definition of Error

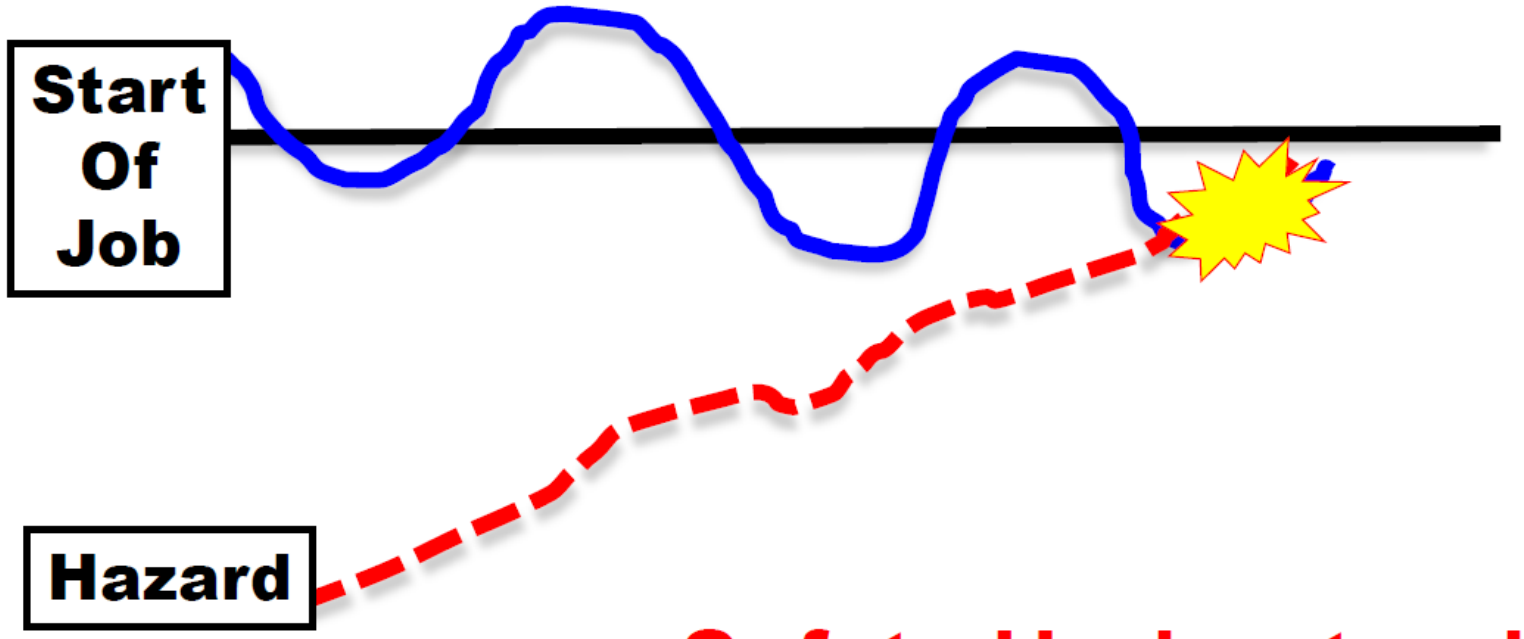
  "Error is the unintentional deviation from intended consequences"

- More often than not, deviations do not result in poor outcomes
- Success and failure have the same antecedents

  In other words

- Performance variability is the reality in dealing with normal work

Analysis of the context - Work as Prescribed vs Work as Done



Safety Understood:

Drift and Accumulation

Appreciation of Context

"[How has your background in economics helped you in your safety differently work?]" Todd Conklin

"I think the background in economics has helped a lot, [specifically] approaching things holistically. If you want to understand safety, you have to understand how the business works - what is the business model? How does the company generate revenue? Where are the problems? Where are the pressure points? You can't just talk about safety, you have to talk about economics - that's the starting point." Nippin Anand

The Basic Ideas of Human Performance

1. People are fallible
2. Blame is not a valuable way to understand failure
3. Accountability for safety is clear and moves upward in the organization
4. Organizational systems and processes drive behaviours
5. The seeds of all future accidents are planted today
6. Everything an organization needs to have a failure already exists in the organization's systems, processes and work environments (Conklin, 2012, pg 110)

Tools to understand work as done

- Root Cause Analysis on normal work
  - Blame, shame - free - just looking at how normal work was accomplished in all the messy detail
  - Will reveal latent factors without the bad outcome as the trigger
  - Can help measure the effectiveness of the RCA team (if nothing is found, likely the team is heavily biased in the face of something going wrongly)

  - Corrective actions can be generated identically to something having gone wrongly

Tools to understand work as done

- Post job review questions:
  1. What happened the way you thought it would happen?
  2. What surprized you?
  3. What hazard did we identify and what hazards did we miss?
  4. Where did you have to "make do", improvise, or adapt? (Conklin, 2012, pg 72)

  - Put these questions on cards, forms, and analyze the answers

Tools to understand work as done

- Make learning a priority

"Create a space, both physically and psychologically, for learning to take place" (Conklin, 2016 a, pg 81)

- Do not depend on learning to take place through osmosis – learning should be a deliberate reflective activity

Investigate "learning teams" from Todd Conklin, Bob Edwards

Learning Teams

- Focus on collecting information on how work is done
  - Blame-free
  - If invoked after an event, involves those most proximal to the event
  - Must be well facilitated (skilled facilitator)
  - Must be oriented to learning, not compliance
  - Must begin with understanding the work as it is performed, not with a "find and fix" mentality
  - Comes in 2 parts - "soak time"
  - Must be willing to hear bad news

Take aways

- Reacting to failure is a choice - either to Get Better OR Get Even
- An emotional response to a trigger is not under rational control
- Understanding how normal work is done is critical to appreciating context, and the messiness of reality
- Bad outcomes need not be the only trigger to learn
- Analyzing normal work can help organizations become more insightful into their own practices, and consequently safer

References

- Conklin, Todd (2012). Pre Accident Investigations. Burlington VT: Ashgate.
- Conklin, Todd (2016 a)Better Questions. New York, CRC Press.
- Conklin, Todd (2016 b). Presentation, available at https://www.oilgasdenmark.dk/wp-content/uploads/2016/05/Todd-Conklin-presentation-TFZ2016.pdf
- Conklin, Todd (2015 - today). Pre-Accident Investigation Podcast.
- Cook, Richard Cook RJ (circa 2000) Material from a defunct website http://www.ctlab.org/index.cfm
- East, Jeff (2017 - today) Spirit of Eq Podcast
- Eckman Atlas of emotions http://atlasofemotions.org/
- Horsely, Carl (2016). Resilience in Healthcare – the other side of "Human Error". Presentation, available at https://tas.health.nz/assets/SWS/SSHW/CCDM-Connect-Forum-28-Oct-2016/Healthcare-Resilience-The-other-side-of-human-error-Dr-Carl-Horsley.pdf
- Marx, David (2009) Whack-a-Mole, The Price We Pay for Expecting Perfection. Texas: Your Side Studios.
- Plous, Scott (2018) MOOC Course Coursera - Social Psychology, available at https://www.coursera.org/learn/social-psychology

Thank You!

Tanya Hewitt
thewi025@uottawa.ca