Accidents & Incidents:

The Human Part

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Agenda

- The Newtonian View of the World

- The "New View"

- Workers as Hazards or Heroes

- Learning Teams

- The Role of Managers and Supervisors as Motivators for Safety

First law of safety

Never take a sleeping pill

and a laxative at the same time

In any order …..

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First corollary

Never remove a safety barrier

that has a dent in It

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Two Views of Failure

Newtonian

Complex-Adaptive
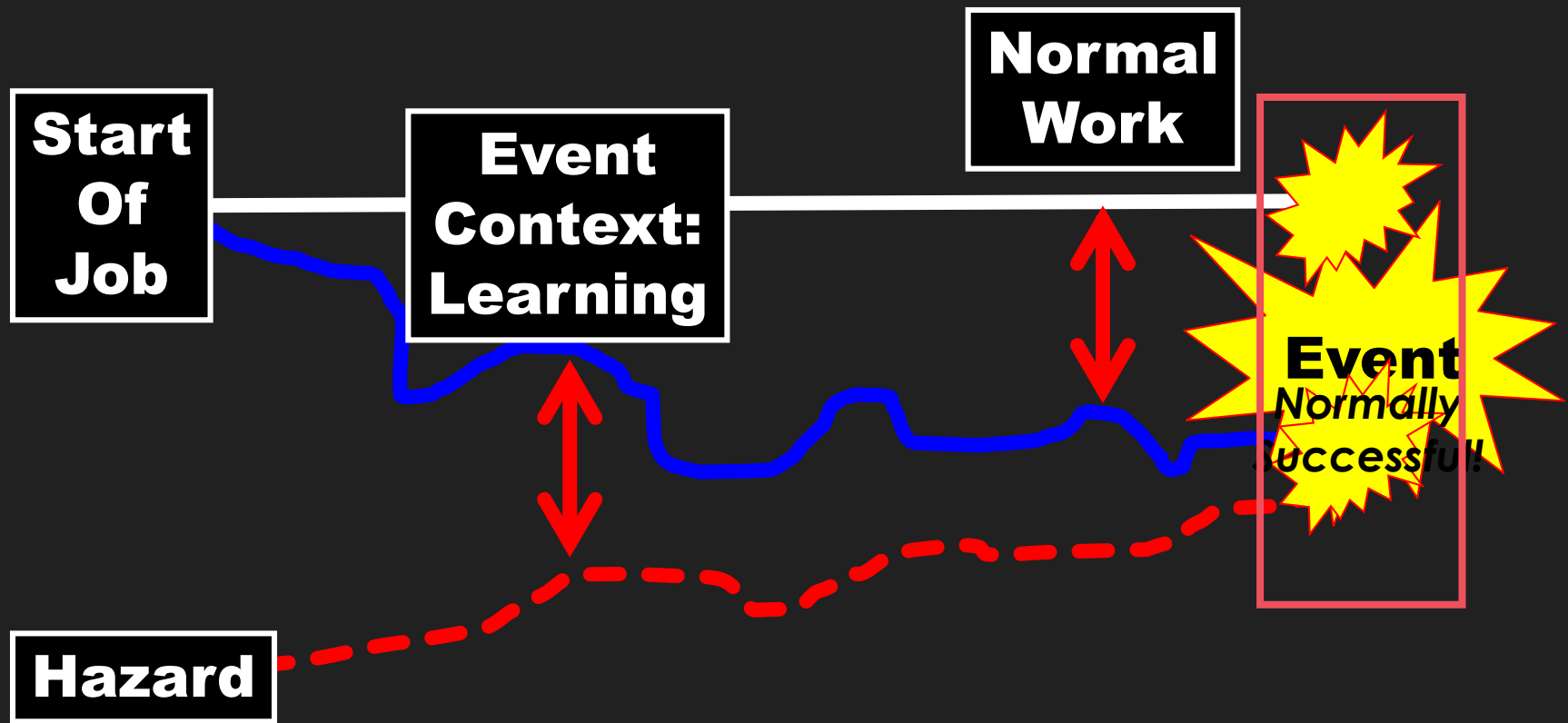
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Newton's Laws of Motion

I. A body in motion stays in motion; a body at rest stays at rest… unless acted upon by another force

II. $F = MA$

III. For every action there is an equal and opposite reaction

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The Significance of Sir Isaac

- The 3rd Law forms the basis of our notion of a "Root Cause"

- Root Cause Analysis (RCA) is essentially a retrospective and linear look at accidents

- We believe (erroneously) that we can back calculate an accident or event back to its root

What if Newton is Wrong?

A New View

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Start Of Job

Event Context: Learning

Normal Work

Event *Normally Successful!*

Hazard

Safety Understood:
Drift and Accumulation

Used by permission; Todd Conklin

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The Worker as Hazard or Hero?

○ Are workers to be protected against because of all the errors they make?

OR

• Do workers adapt constantly to get the job done safely and without which a company cannot be successful

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Why do we perform investigations?

○ Blame and punish

OR

○ Learn and Improve

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You can't do both

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Learning Teams

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Thought Exercise

- A bat and ball cost $1.10

- The bat costs one dollar more than the ball

- How much does the ball cost?

Daniel Kahneman, Thinking, Fast and Slow, 2011

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Was your answer 10¢????

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Try This:

- Y= price of the ball
- X= price of the bat
- $X + Y = \$1.10$
- $Y + \$1.00 = X$
- $(Y + 1.00) + y = 1.10$
- $2Y = .10$
- $Y = .05$

10¢ is the result of "fast" thinking
5¢ is the result of "slow" thinking

Learning Teams try to stay in the "slow" thinking mode most of the time

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Learning Team Phases*

1. Determine the need for a Learning Team

2. First session: Learning Mode only

3. Provide "soak time"

4. Second session: Start in Learning Mode

5. Define current defenses/Build new ones

6. Tracking actions and criteria for closure

7. Communicate to other applicable areas

*Todd Conklin, <u>Pre-Accident Investigations; Better Questions</u>

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1. Determine the Need for a Learning Team

- Every variance from expected results may be worth investigating

- Some variances are more information rich than others

- Where is context important?

- Start with events that cause actual harm

- Next priority are near misses (near hits)

- You don't have enough time or money to investigate everything

2. First Session: Learning Mode only

- Gather the team
- Explain the process
- Goal setting & expectations
- Do some instruction on New View vs. Old View thinking
- No solutions
- Ask "how" not "why"
- Describe how work gets done
- What conditions needed to exist for this event to take place

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3. Provide Soak Time

- Ideally provide a day to let the learning from the first session soak in

- It's OK to gather other information

- It's also OK to add additional members to the team

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4. Second Session: Start in Learning Mode

○ Recap learning from previous session

○ Add new thoughts gained from soak time

○ Transition from learning to action

○ It's time to begin to define solutions

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5. Define current Defenses/Build New Ones

○ What defenses were you relying on to prevent this from happening?

○ How effective were they?

○ What else do you need to keep this from happening?

○ Micro-experiment to see what might work

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6. Tracking actions and criteria for closure

- Solutions must be mutually agreed on by the team, and managers who have the resources to dedicate to the solutions

- Right now or later?

- Why don't workers fix problems?:
  - It's not my job to fix it
  - I'll get in trouble if I fix it
  - I don't have authority to fix it

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7. Communicate to other applicable areas

- Learning Teams give workers the confidence to work safely after an upset

- Learning Teams give the company the capacity to work more safely

- Is there other extent out there?

    - Extent of condition

    - Extent of cause

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Some Considerations on Learning Teams

- Learning Teams often conflict with well established confirmation bias

- The desire to blame and punish is often more powerful than the desire to learn and improve

- Newton's Third Law often gets in the way in technical organizations

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The Role of Managers and Supervisors

- Sidney Dekker:

  - "To understand failure…we must understand our reaction to failure"

  - "People do not operate in a vacuum, where they can decide and act all powerfully. To err or not to err is not a choice. Instead people's work is subject to and constrained by multiple factors "

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Immediate Steps

Successful organizations seem to do four things very well:

- Constantly predicting the next failure

- Consistently reducing operational complication

- Respond with urgency to pre-cursor data

- Respond to actual events with deliberation

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Questions?

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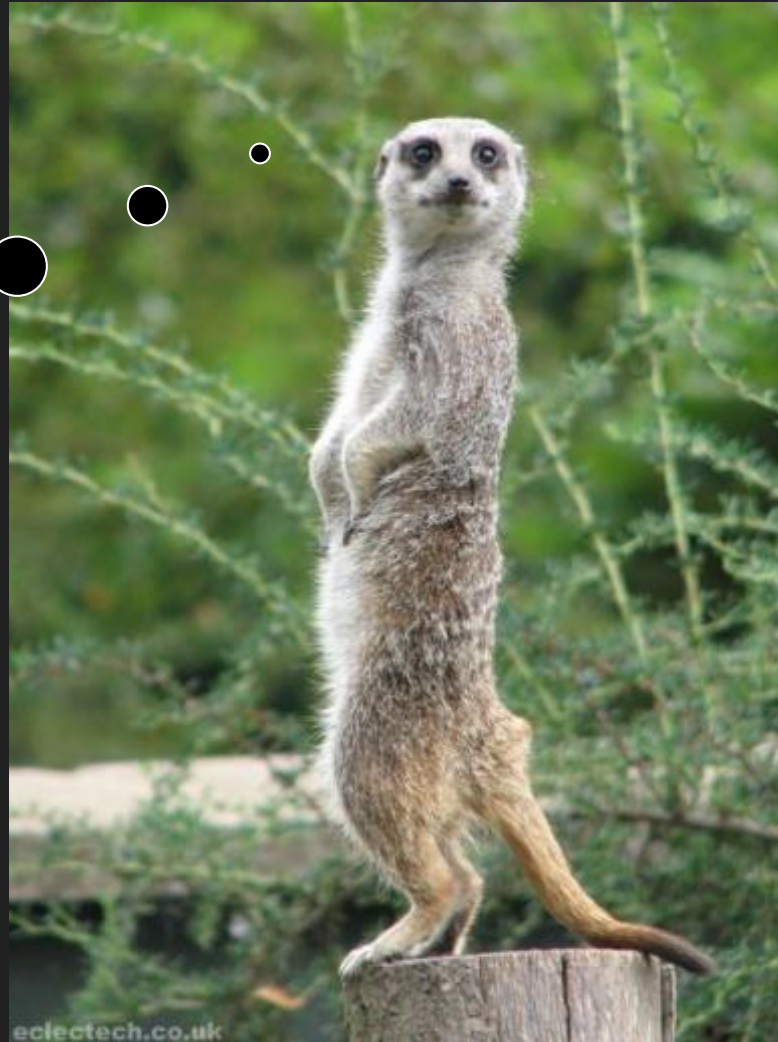
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- ITI HPI Class: July 9/10 Houston
- ITI Accident Investigation Class: July 11 Houston

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