Resilience Engineering for the Safety Pro or… *Under Pressure*

Ron Gantt, Ph.D, CSP
San Diego Safety Summit 2025

Momma said there’d be days like this…

Safety is simple…

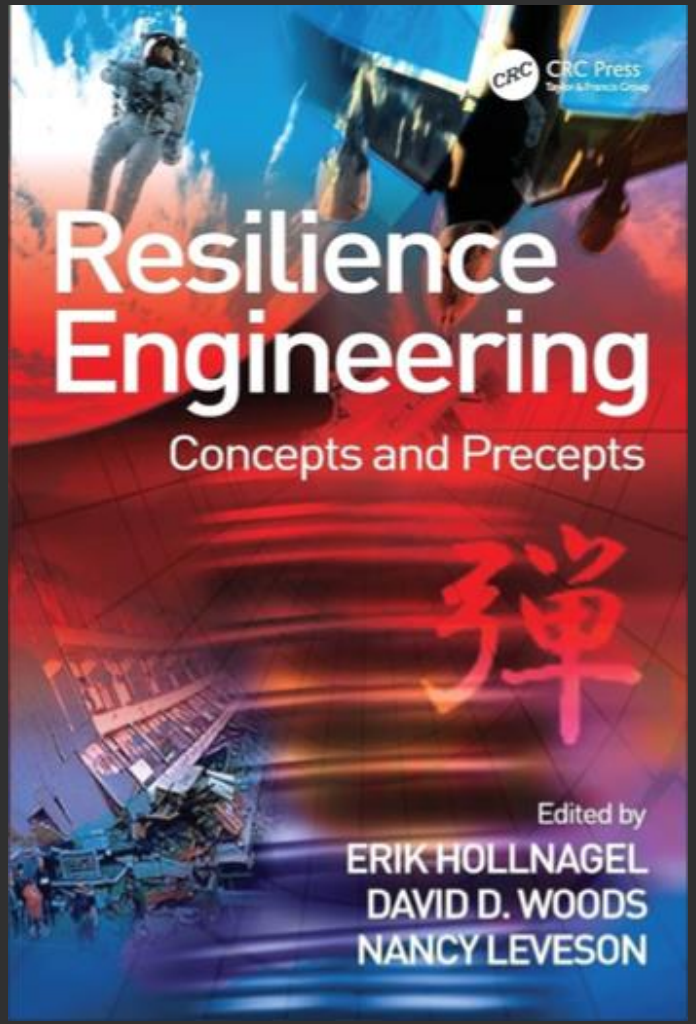
…until it’s not.

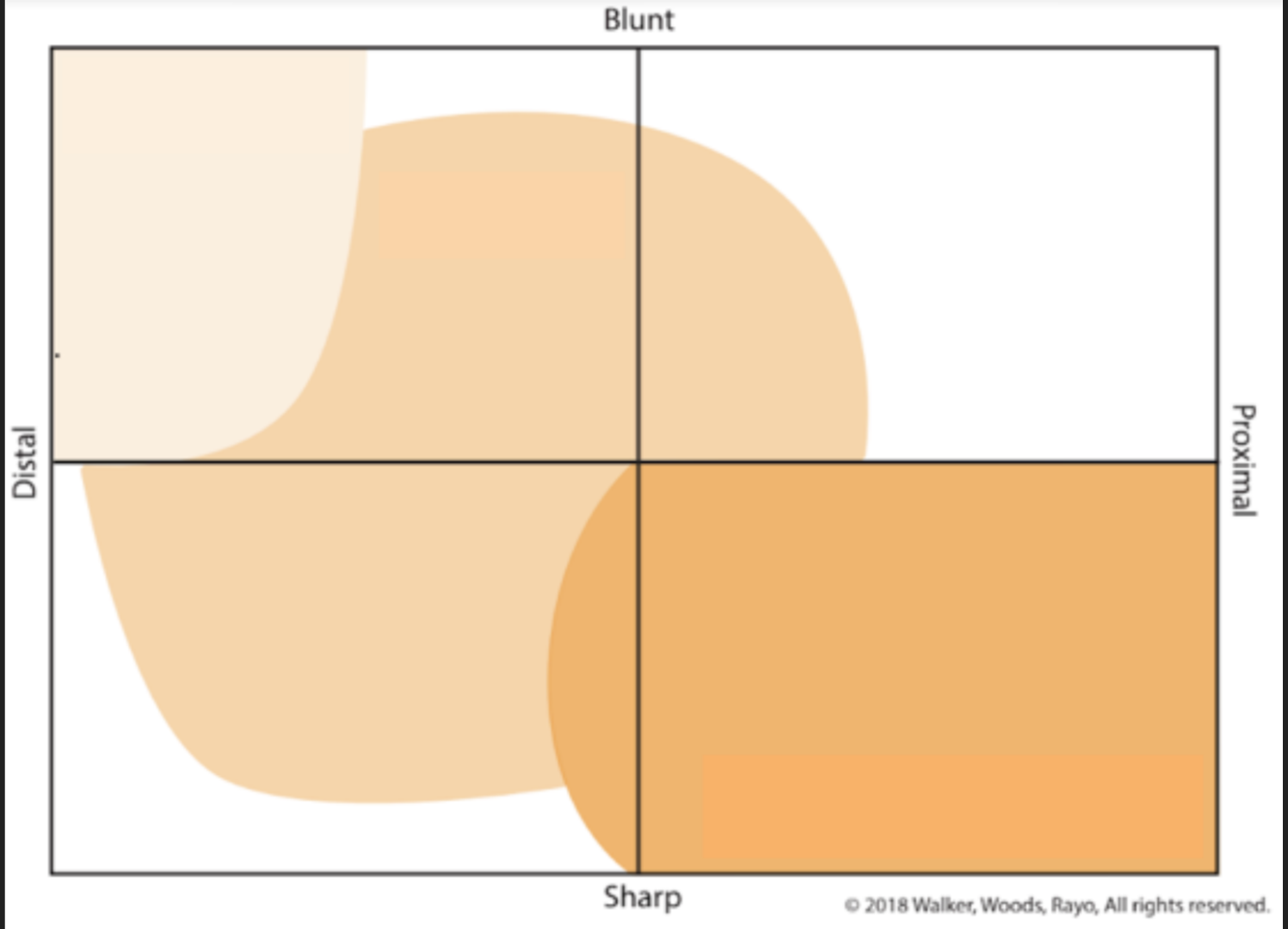
“When we try to pick out anything by itself, we find it hitched to everything else in the universe.”

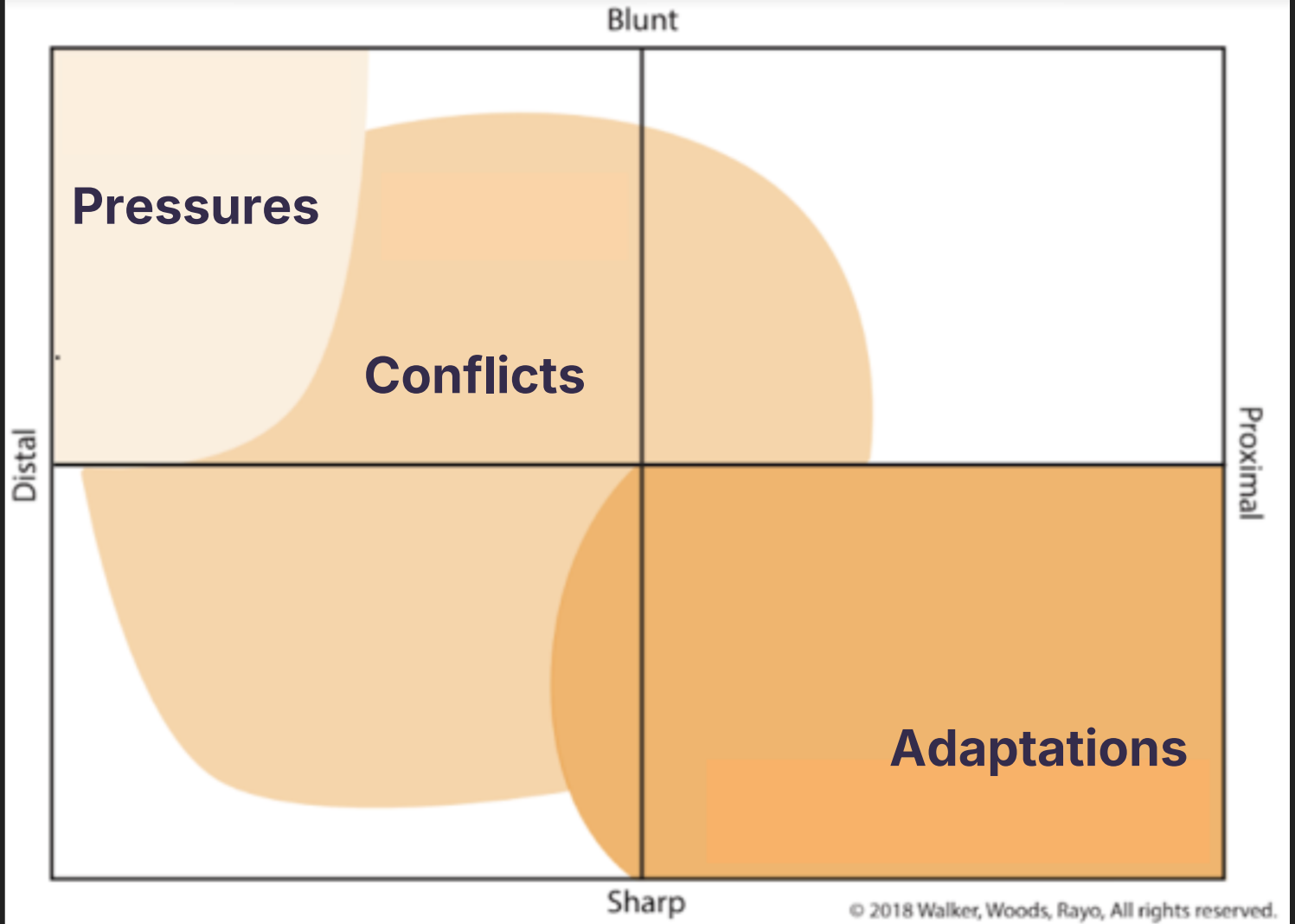
- John Muir

Resilience engineering

The applied scientific discipline focused on creating the conditions for sustained performance in the face of complexity (uncertainty, change, etc.)



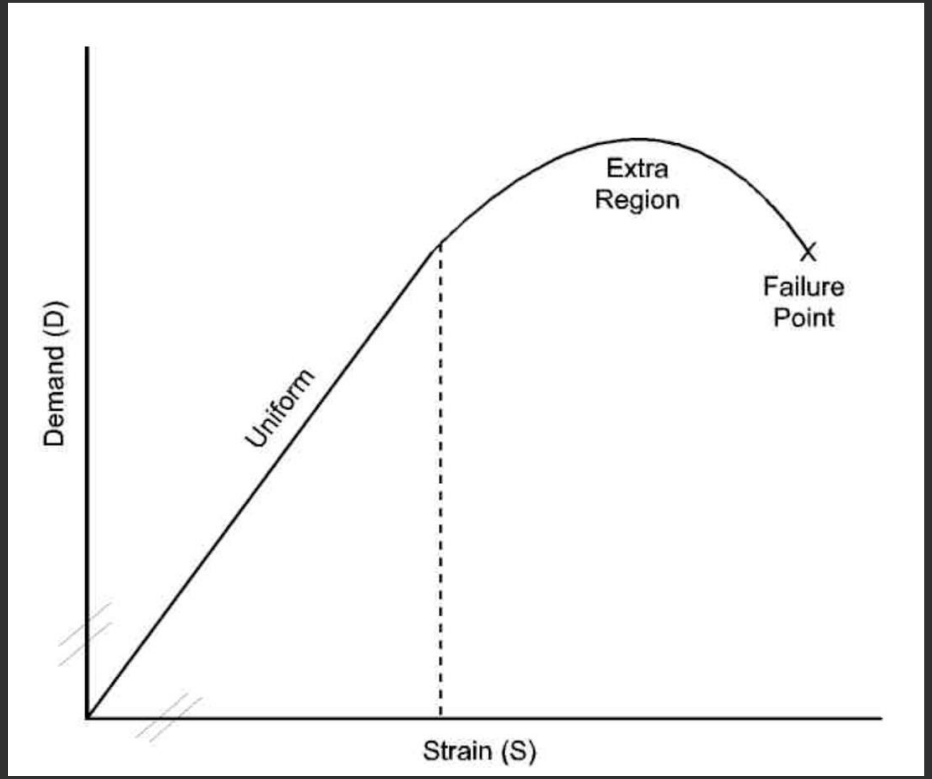



Blunt
Pressures
Conflicts
Distal
Proximal
Adaptations
Sharp
© 2018 Walker, Woods, Rayo, All rights reserved.

“Under pressure
That burns buildings down
Splits a family in two
Puts people on streets”

Patterns of adaptive system failure

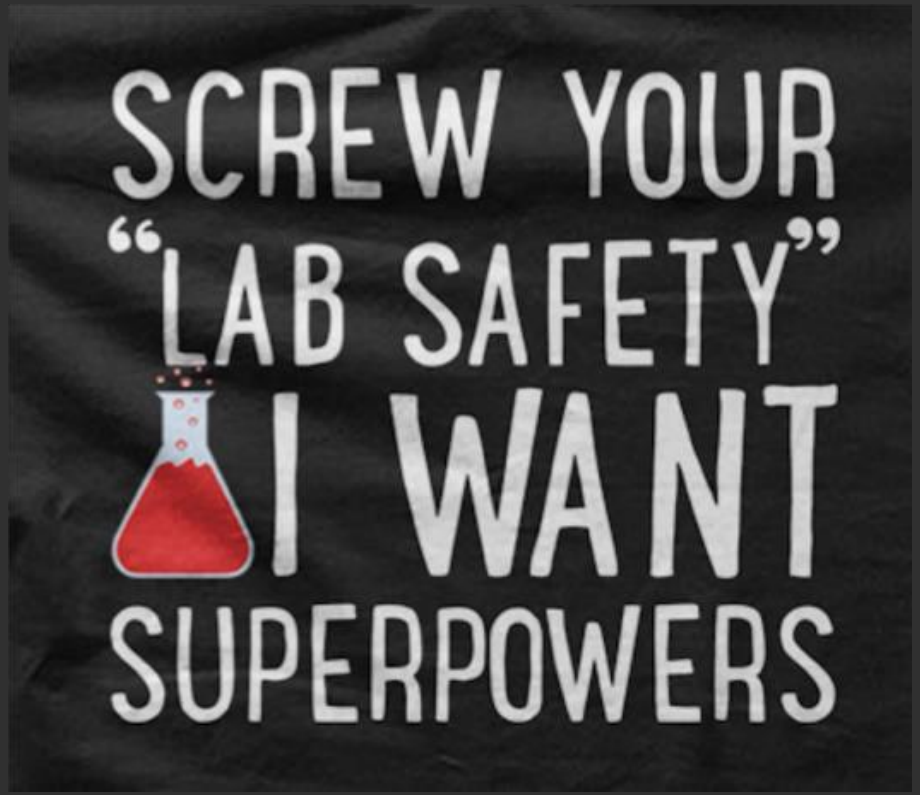
1. **Decompensation ("Insanity laughs, under pressure we're breaking")**
1. Working at cross purposes
2. Getting stuck in stale models



(Woods & Branlat, 2011; Woods & Wreathall, 2009)

Patterns of adaptive system failure

1. Decompensation
2. **Working at cross purposes (“Splits a family in two”)**
1. Getting stuck in stale models



(Woods & Branlat, 2011; Woods & Wreathall, 2009)

Patterns of adaptive system failure

1. Decompensation
2. Working at cross purposes
3. **Getting stuck in stale models ("It's the terror of knowing what this world is about")**

(Woods & Branlat, 2011; Woods & Wreathall, 2009)

How do we bring appropriate resources to bear to handle challenges?

How do we synchronize units to manage the expression of initiative across the network?

How can we update our model of the world to keep pace with events?

“Can’t we give ourselves one more chance?

Why can’t we give love that one more chance?

…

‘Cause love’s such an old fashioned word

And love dares you to care for the people on the edge of the night.

And love dares you to change our way of caring about ourselves.”

RE in Practice

How do we bring appropriate resources to bear to handle challenges?

1. Design for observability and capacity.

Design to make it easy to know what pressures people are dealing with and how hard they are working.

Identify and protect additional resources to deploy in those moments.

RE in Practice

1. Design for observability and capacity.

How do we synchronize units across the network?

2. Allow for building and maintaining common ground.

Take coordination seriously as a key control measure for successful work.

Consider a ‘host’ function, particularly in multi-party work.

RE in Practice

1. Design for observability and capacity.
2. Allow for building and maintaining common ground.

How do we update our model of the world to keep pace with events?

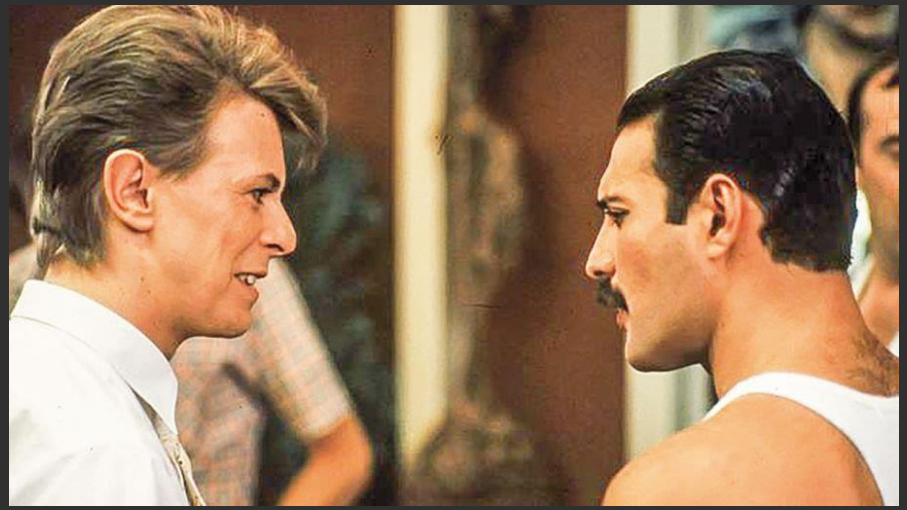
3. Build in processes for proactive learning and anticipation.

Use the learning to identify how your system is working.

And then look ahead to see how upcoming changes may create variation, adjustment, and new risks.

RE in Practice

1. Design for observability and capacity.
2. Allow for building and maintaining common ground.
3. Build in processes for proactive learning and anticipation.



“This is our last dance
This is ourselves
Under pressure”

Thank you

Ron Gantt, Ph.D, CSP
rongantt@hotmail.com