

Organizational Introspection Analysis / Sensemaking

Presentation to:



March 28, 2012



Its about when the unexpected happens ---

***And things that never happened before –
now happen all the time!***



29 dead – Massey Upper Big Branch Mine, 2010



11 dead -
Deepwater
Horizon rig,
2010

15 dead, +170 injured,
BP Texas City Refinery, 2005





The only constant is ---

*“It is only through **enforced** standardization of methods, **enforced** adoption of the best implements and working conditions, and **enforced** cooperation that faster work can be assured. And the duty of **enforcing** the adoption of standards and secrets in America. **enforcing** this cooperation rests with **management alone.**”*

Wellman (cited in Suchman, 1995)

F.W. Taylor - Principles of Scientific Management (1911),

Neuro-science, cognitive science & complex-sociotechnical organization research have disrupted the historical paradigms of human & organizational performance

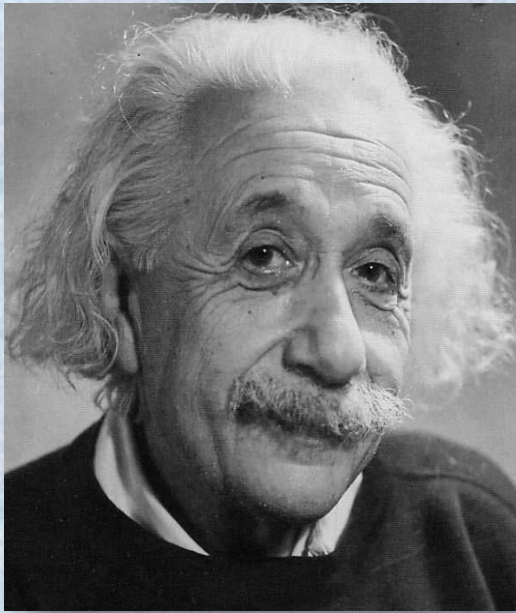


- Malcom Gladwell – *Blink, Outliers & The Tipping Point*
- Daniel Pink – *Whole New Mind & Drive*
- Nassim Nicholas Taleb – *The Black Swan*
- Daniel Kahneman – *Thinking Fast, Thinking Slow*

“In a time of drastic change it is the learners who inherit the future. The learned usually find themselves equipped to live in a world that no longer exists.”

Eric Hoffer





Why think about human & organizational behavior ?

"The world we've made, as a result of the level of thinking we have done thus far, creates problems we cannot solve at the same level of thinking"



“By three methods we may learn wisdom: first by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest.” (Confucius)

Biases concerning the management of safety:

Beliefs about:

Human Behavior

How do humans behave? What motivates people? Why do people make errors/mistakes? How reliable are people in general? How do humans behave in groups/teams? How does the presence of others influence the individual?

Information and Uncertainty

How can safety be measured? What is considered valid information? How can information be gathered? What are the uncertainties associated with information? What are 'risks' and 'probabilities'?

Organizations

How can people be influenced/led? What is the most effective way to organize work? How do organizations learn/change? What kind of phenomenon is organizational culture? Is an organization just an aggregate of its individual members?

Safety Models

How do accidents happen? What is safety? Is it possible to predict accidents? What is the role of humans in accidents or safety? How do organizations contribute to safety? What is safety culture? How does occupational safety differ from systems safety?

Beliefs about: human behavior

We must change the way we think about error and blame – our prevailing beliefs about accident causation, blame and accountability doom us to Normal Accidents!

How do humans behave? What motivates people? Why do people make errors / mistakes? How reliable are people in general? How do humans behave in groups /teams? How does the presence of others influence the individual?

Beliefs about: organizations

How can people be influenced / led?
What is the most effective way to
organize work? How do
organizations learn / change? What
kind of phenomenon is
organizational culture? Is an
organization just an aggregate of its
individual members?

Beliefs about: Information and uncertainty

How can...? What
is consid...? How
can inform...? What
are the u...? What
information? "What are risks" and
"probabilities"?



Beliefs about: Safety models

How do accidents happen? What is safety? Is it possible to predict

$$A = \sum o_d e^{ls} a(r) e^{wrong}$$

humans in accidents or safety? How do organizations contribute to safety? What is safety culture? How does occupational safety differ from e.g. process safety?

*All Models are wrong ---
but some are useful*

Starting with first principles:

Stationary Schrödinger's Equation (1)

$$\frac{\hbar^2}{2m} \nabla^2 \Psi(\vec{r}, t) + V(\vec{r}) \Psi(\vec{r}, t) = i\hbar \frac{\partial \Psi(\vec{r}, t)}{\partial t}$$

$\Psi(\vec{r}, t) = \psi(\vec{r}) f(t)$

$$\frac{\hbar^2}{2m} f \nabla^2 \psi + V \psi f = i\hbar \psi \frac{\partial f}{\partial t} \quad / \psi f$$
$$\frac{\hbar^2}{2m} \frac{\nabla^2 \psi}{\psi} + V = i\hbar \frac{1}{f} \frac{\partial f}{\partial t}$$

DEPENDS ONLY ON t

‘There is no such thing as a dysfunctional organization, because every organization is perfectly aligned to achieve the results it gets.’

The Practice of Adaptive Leadership: Ronald Heifetz, Alexander Grashow and Marty Linsky

Complexity & change require “alternative analysis” – aka Sensemaking

- Traditional analysis generates forecasts or explanations based on logical processing of available evidence (e.g. linear time line, barriers, statistical treatment)
- Alternative analysis seeks to help analysts and policy-makers stretch their thinking through structured techniques that challenge underlying assumptions and broaden the range of possible outcomes considered (e.g. scenarios, appreciative inquiry, assumption surfacing)

See for instance – “Sensemaking; A Structure for an Intelligence Revolution”
NATIONAL DEFENSE INTELLIGENCE COLLEGE WASHINGTON, DC March 2011

Strategy for seeking reliability in sociotechnical systems

$$\begin{array}{l} Re + Md = \emptyset E \\ (Re/Md) \Delta W \rightarrow \emptyset E \end{array}$$

- ✓ • Re – increase mindfulness to notice and mitigate risk
- ✓ • Md – maximizing defense effectiveness
- ΔW – work as imagined vs. work as done
- ✓ • $\emptyset E$ – no consequential events

Learning in Doing: Social, Cognitive, and Computational Perspectives



MAKING WORK VISIBLE



ETHNOGRAPHICALLY
GROUNDED
CASE STUDIES
OF WORK
PRACTICE

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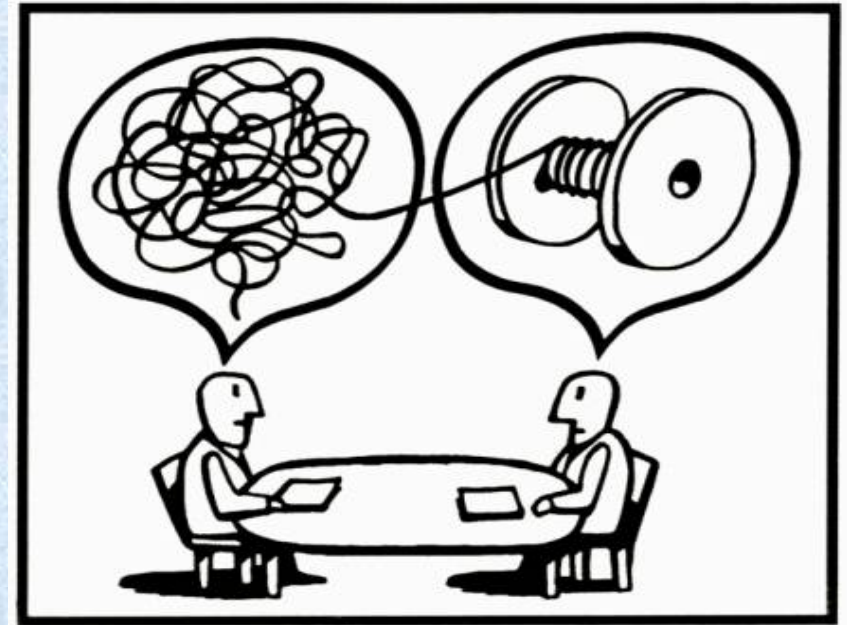
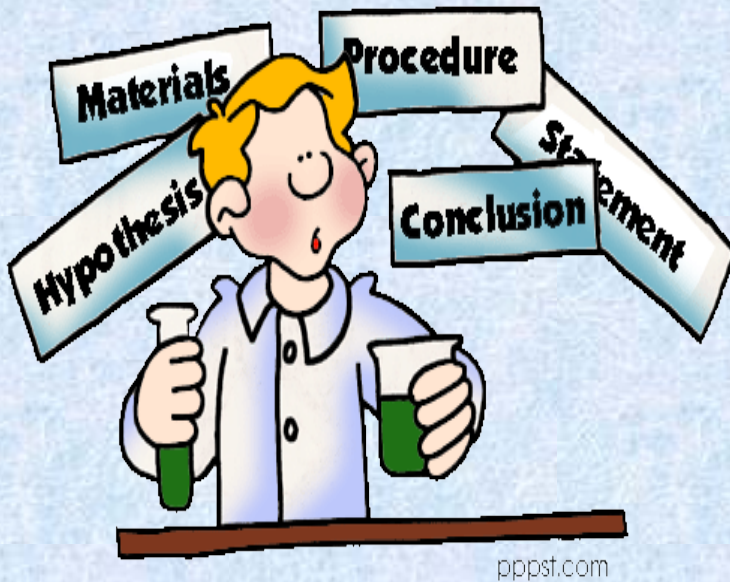


CAMBRIDGE

ΔW

Successful organizations seem to do four things very well:

- Constantly seek to predict the next failure
- Consistently reduce operational complexity
- Act with urgency to pre-cursor data
- Respond to actual events with deliberation



Problem solver

Sense maker

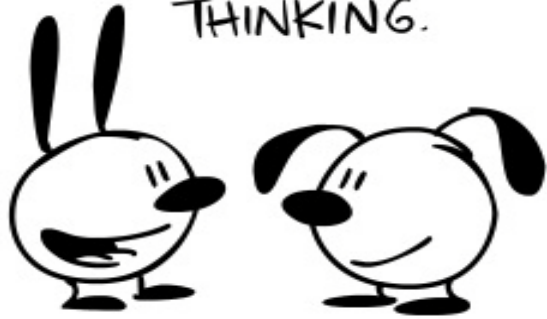
The task of leadership is to create an alignment of strengths in ways that make a system's weaknesses irrelevant."

Peter Drucker

Leadership Questions –

- How does the organization react to ambiguous danger signals?
- Is the organization capable of building organizational redundancy?
- How does the organization handle conflicting objectives when safety is involved?
- How are safety critical tasks handled across organizational borders?

I'VE GIVEN UP MY
BLACK-AND-WHITE
THINKING.

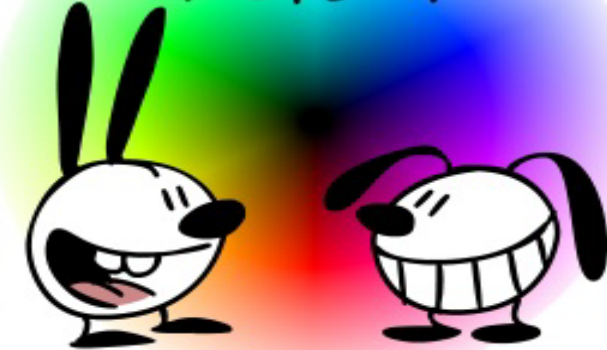


THE SHADES BETWEEN
BLACK & WHITE
AREN'T GRAY...

mimiandunice.com

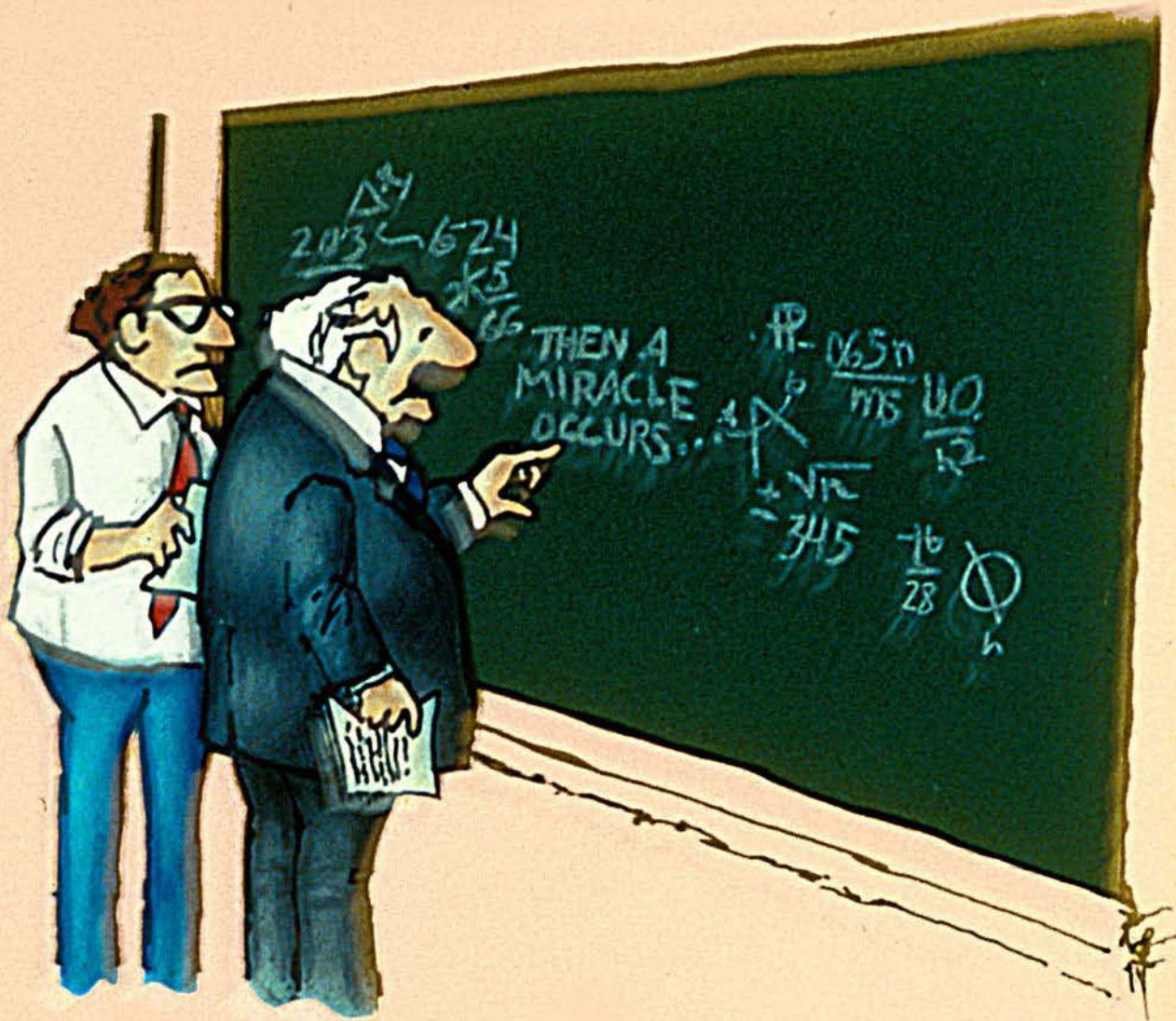


THEY'RE THE FULL
COLOR SPECTRUM!



- Beware the illusion of certainty
- Surviving change requires learning
- We represent reality through models
- All models are wrong; some are useful
- Cause is created, not discovered
- Analysis allows us to learn if events fit our existing models
- Sensemaking allows us to challenge existing models & create new ones

Our experience of life is a team sport



Δ^2
203 ← 624
*5
86

THEN A
MIRACLE
OCCURS.

$\frac{p-065n}{ms}$ $\frac{40}{12}$
 \sqrt{n}
345 $\frac{76}{28}$ Φ

