



Risk Sensing, Micro-Gaming, and the Development of Crisis-Resilient, Anti-Fragile Systems

Phillip Van Saun, Director of Risk, Security and Resilience
University of California, Office of the President, Risk Services



*“Some people talk in their
sleep.”*

*Lecturers talk while other
people sleep.”*
– Albert Camus



Thesis

Decisions made before, during and after a crisis can be improved by training decision-makers to recognize and adjust to emerging and plausible risk scenarios.



Challenge

Inculcate risk sensing, sensemaking and scenarios-based micro-gaming into strategic planning.



- ❖ Review factors which have a negative impact on the process of reaching positive analytical findings in the face of a crisis.
- ❖ Present fast & frugal crisis decision-making and the micro-game process.



Background

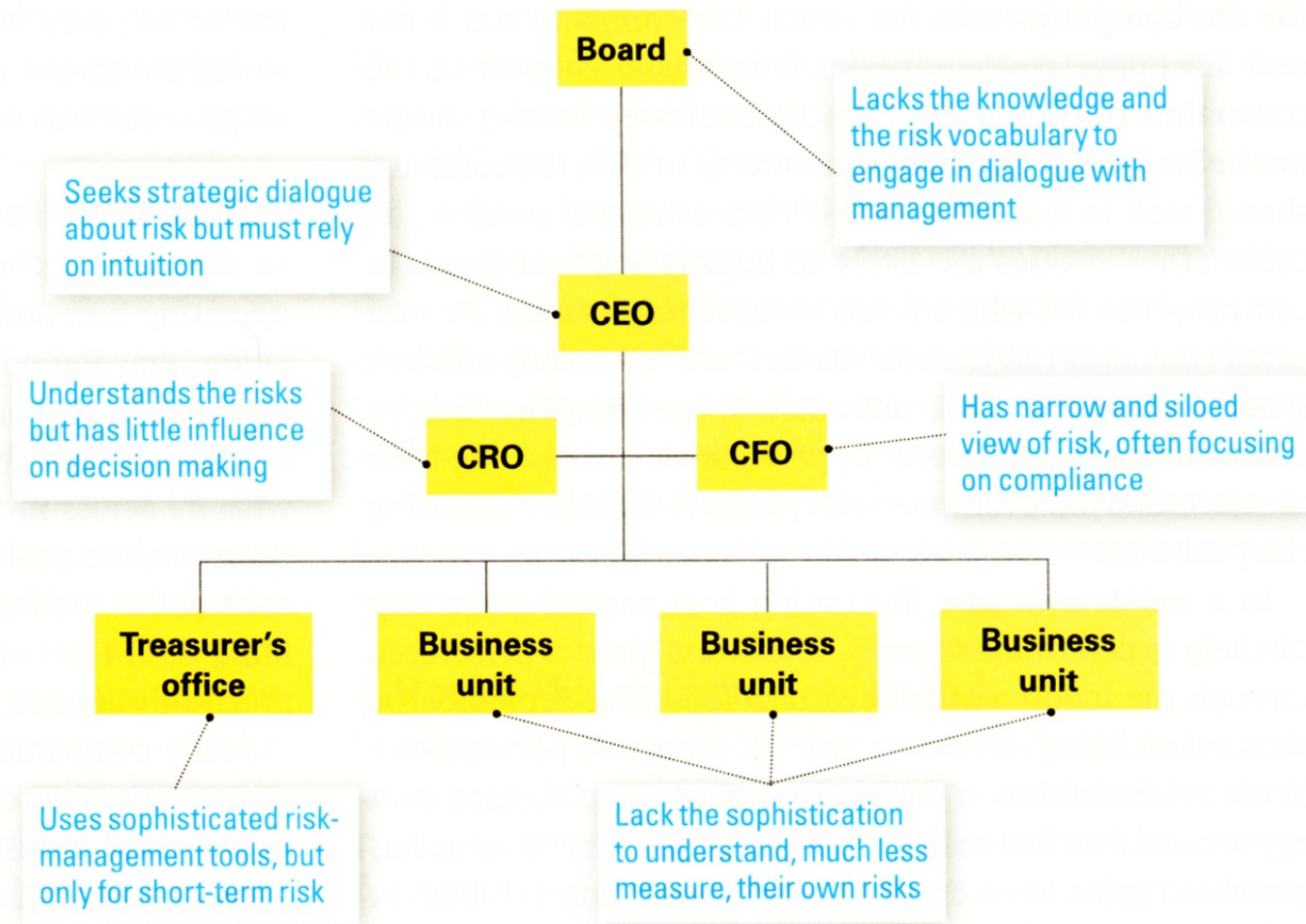
- ❖ “The bulk of today’s business decisions are made with incomplete information and in the face of an **uncertain future.**” - Roger Martin
- ❖ “Proper analysis, rather than additional information, often contributes to an **accurate judgment.**” - Richards Heuer
- ❖ The **techniques** to properly manage a crisis are not practiced at the highest levels of most organizations.



Crisis leadership, or leadership crisis?



- ❖ Normal management structure not well suited for crisis decision making





How is this different?

- ❖ Intelligence collection, risk assessment, threat mitigation, crisis response and recovery are rarely intergraded into organizational strategy.
- ❖ Risk management is typically delegated to a chief risk officer.
- ❖ The risk intelligence and mitigation process typically produces results that do not easily translate into traditional measures of success.



Crisis/risk

- ❖ *‘An unpredictable event that threatens important expectancies of stakeholders and can seriously impact an organization’s performance and generate negative outcomes.’*
- ❖ **Negligent Failure to Plan.**



Predictable Surprises*

- ❖ Hostile take-over (change in political group in power)
- ❖ Financial catastrophe (bad debt/budget reductions)
- ❖ Loss of facilities/resources (deferred maintenance)
- ❖ Employee sabotage/violence
- ❖ Scandal
- ❖ Strike/boycott
- ❖ Act of war
- ❖ Natural disaster
- ❖ Industrial accident
- ❖ Terrorism
- ❖ **Fantasy plans**
- ❖ Blame phase

* Predictable Surprises, Watkins and Bazerman. HBSP 2004.



Predictable surprise

“They (business leaders) tend to ignore or downplay the possibility of random or uncontrollable occurrences that may impede their progress toward a goal.”

- Nobel Laureate Daniel Kahneman



Decision bias

“Those of us who have looked to the self-interest of lending institutions to protect shareholders’ equity, myself included, are in a state of shocked disbelief.”

– Alan Greenspan, Former chairman of the Federal Reserve and author of *The Map and the Territory: Risk, Human Nature and the Future of Forecasting*





Cognitive bias

❖ Confirmatory bias

❖ Information bias

❖ Perceptual bias

❖ Probability neglect

❖ Assuming a rational actor

❖ Mental noise



Confirmatory bias

We tend to perceive and accept input that is consistent with and reinforces our biases.

We tend to ignore input that is not consistent with or challenges our biases.

We tend to interpret input in ways that confirm our biases.



October 19, 1962

“The Soviets won't take Berlin if we act in Cuba but will take it if we fail to act” - Air Force chief of staff General Curtis LeMay



October 19, 1962

"This is almost as bad as the appeasement at Munich.... I just don't see any other solution except direct military intervention right now." – LeMay



October 23, 1962

“...Throwing down a card on the table in a game which we don't know the ending of.” – JFK



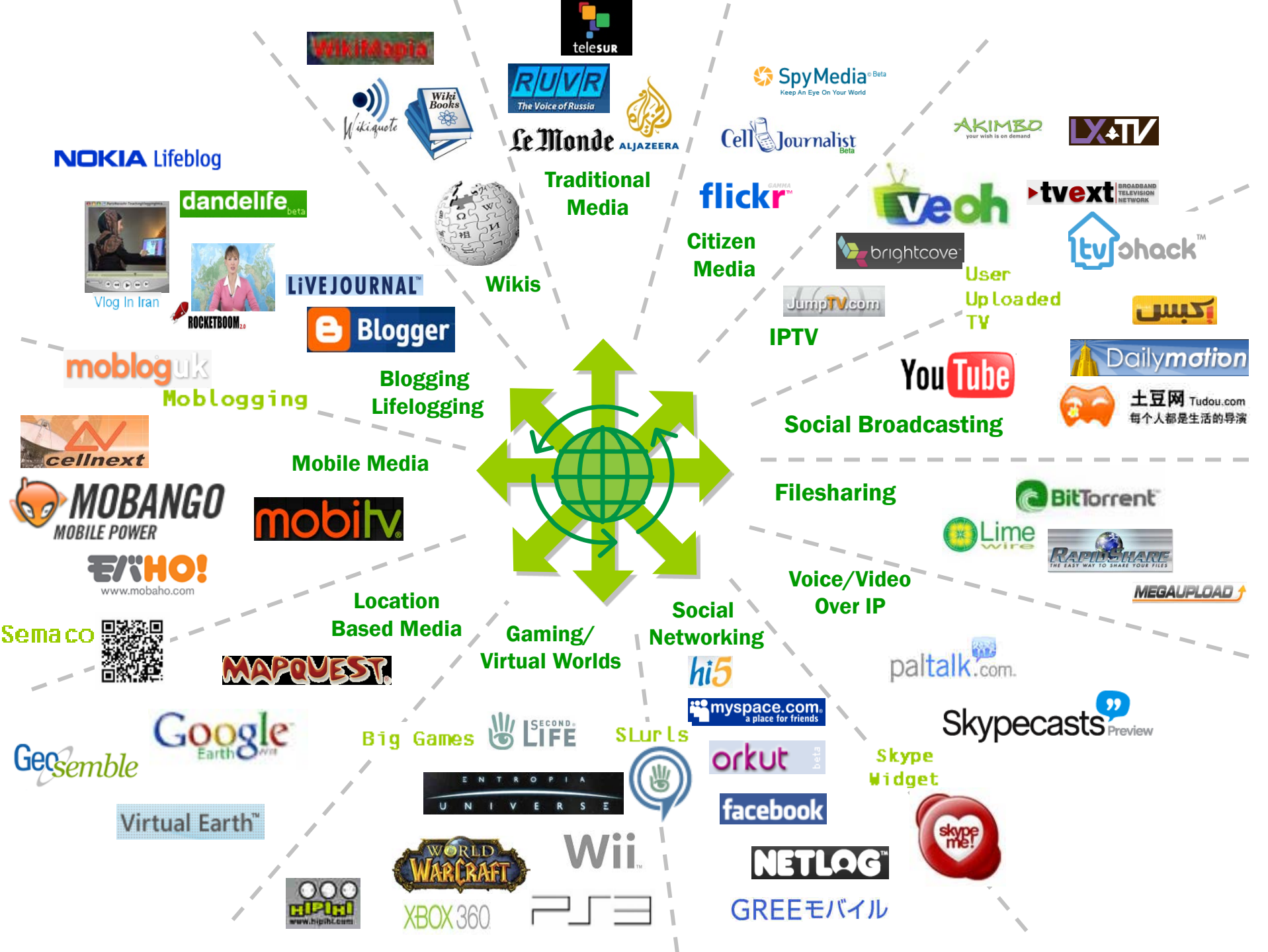


“People, organizations, communities, countries make bad decisions all the time based on their experience – Some call this the “preparing to fight the last war” syndrome.” - Dr. Wayne Blanchard



Information bias

- Greater if public commitment
- Greater in group settings
- ❖ Over-reliance on readily available information
- ❖ Overconfidence
- ❖ Search for confirming data





7.2 earthquake in Baja California, Mexico Easter Sunday, April 4, 2010







What rescuers' and experts **DO NOT
recommend you do during an earthquake**

DO NOT get in the "triangle of life"



CAMPUS NOTICE

CONTINUITY AND EMERGENCY SERVICES

April 5, 2010

**ALL ACADEMICS AND STAFF AT UCSD (excluding UCSD Medical Center)
ALL STUDENTS AT UCSD**

SUBJECT: Earthquake Safety

The 7.2 earthquake which occurred in Baja California, Mexico yesterday reinforces the need for our campus community to understand and take the appropriate actions in response to earthquakes. In the event of strong shaking resulting from an earthquake, duck under a heavy piece of furniture like a desk or table, cover your head and hold on to the furniture. If there is no furniture to duck under, seek cover against an interior wall and protect your head and neck with your arms. Avoid danger spots near windows, hanging objects, mirrors or tall furniture. When outdoors, move to a clear area away from trees, signs, buildings, or downed electrical wires and poles. For more information on earthquake preparedness, go to:

<http://www-ehs.ucsd.edu/emerg/response/ergquake.htm>

Departments should take steps to reduce the hazard of injury and damage which can result when equipment, furniture, shelved items, and other building contents dislodge and fall during a strong earthquake. Guidance on how best to secure equipment can be found at:

<http://blink.ucsd.edu/go/quakehazards>

Philip Var Saun
Director
Continuity and Emergency Services

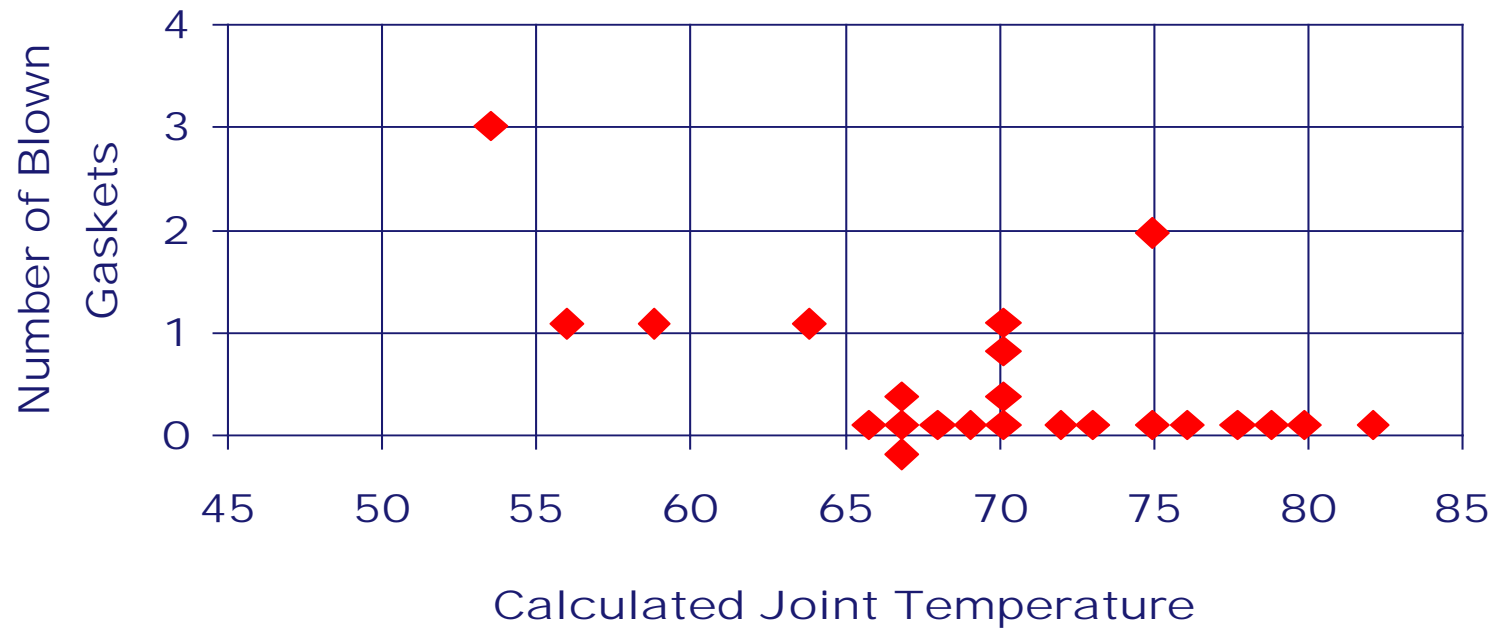


- ❖ *“The information in this email is actually quite antiquated...the advice to hide under furniture is from the cold-war and doesn't reflect modern responses.”*
- ❖ *“Why on earth would someone want to duck under a piece of furniture? That’s the first object that will crush them to death is it not? are there studies to support this hypothesis?”*
- ❖ *“You have given people wrong information that could kill them.”*



Perceptual bias

Races With and Without Blown Gaskets





Temp	Races w/ Blown Gaskets	# of Races	Probability
------	------------------------	------------	-------------

<65	4	4	100%
-----	---	---	------

65-70	2	10	20%
-------	---	----	-----

71-80	1	9	11%
-------	---	---	-----

>80	0	1	0%
-----	---	---	----



Blue

Red

Yellow

Purple

Yellow

Blue

Green

Red

Purple

Green

Red

Blue



Probability neglect





Moral hazard & risk transfer

- ❖ Condition recognized in insurance industry.
- ❖ Behavior change when risk of loss is partially or fully transferred.
- ❖ Can be unwittingly enabled by stakeholders.
- ❖ Growing trend?



AIG ERM EIEIO

“AIG’s corporate philosophy has always encouraged full profit center accountability”

Charlie Shamieh, Executive Director, Enterprise Risk Management, December 6, 2007



“No one seemed to be minding the store from a risk management point of view.”

- Former AIG CEO Hank Greenberg reacts to the government's rescue of the insurance company. September 18, 2008



Probability neglect?





July 31, 1985

To: Vice President of Engineering, Morton Thiokol

From: Roger Boisjoly

‘It is my honest and very real fear that if we do not take immediate action to dedicate a team to solve the problem, with the field joint having the number one priority, then we stand in jeopardy of losing a flight along with all the launch pad facilities.’



January 28, 1986





Assuming a rational actor





Mental noise

- ❖ Tend to focus more on negative aspects of a situation than on the positive.
- ❖ Often have very different concerns and perceptions of threat than those of experts.
- ❖ Tend to have difficulty hearing, understanding, and remembering information.
- ❖ Even when the information being relayed is understood and remembered, the fear associated with the event can cause feelings of distrust.
- ❖ Distrust can result in people losing confidence in those in charge.
- ❖ Feelings that leaders are not listening, that 'experts' are not really competent, or that the 'whole' truth is not being told can arise during times of crisis.



Fast & frugal heuristics

- ❖ Ecologically rational (that is, they exploit structures of information in the environment).
- ❖ Founded in evolved psychological capacities such as memory and the perceptual system.
- ❖ Fast, frugal, and simple enough to operate effectively when time, knowledge, and computational might are limited.
- ❖ Precise enough to be modeled computationally.
- ❖ Powerful enough to model both good and poor reasoning.



Fast & frugal crisis-decision tools

❖ Fluency heuristic - If one alternative is recognized faster than another, infer that it has the higher value on the criterion.

Schooler & Hertwig, 2005

❖ Take-the-best - To infer which of two alternatives has the higher value: (a) search through cues in order of validity, (b) stop.

Gigerenzer and Goldstein, 1996



Close and evacuate or stay?

❖ One alternative is recognized faster than another, infer that it has the higher value.

❖ Which of two alternatives has the higher value – Stay or leave?

News Cover Story

DISPATCHES
THEY DON'T TEACH THIS IN B-SCHOOL

WHEN THE NATURAL RHYTHMS of our lives are brutally disrupted, we respond with fear, anger, calm, sometimes violence, and often with courage. Katrina was that kind of upheaval. It obliterated towns, submerged a great city, exposed a nation's frailties and prejudices, and uprooted thousands. It also brought forth untold instances of duty and determination. Here are the stories of two men and their colleagues, Gulf Coast residents who, when their world was torn apart one Monday, deftly managed their way through the storm.

'VERTICAL EVACUATION' AT THE HILTON

With the general manager on vacation, Sawyers tells the staff to offer all comers half-price rates; the \$95-a-night fee goes mostly uncollected.

SATURDAY, AUG. 27
VERY QUICKLY, HALF the hotel's rooms are booked up, and many are packed with extra family members. An additional 200 reservations come in. Meanwhile, about 400 employees and their families have taken cots into the health club. By nightfall, Sawyers counts some 4,200 occupants, plus various pets. He cuts off more reservations: "I don't want to overtax our resources."

SUNDAY, AUG. 28
AFTER SPENDING the night at home in a nearby neighborhood, Sawyers and his

FRID SAWYERS, 44, THOUGHT HE WAS in for just another routine week as manager of the Hilton New Orleans Riverside. When news came that a hurricane might pass nearby, he figured the giant 16th-floor inn would be a safe haven in a short storm for staffers and their families, as well as tourists and locals who wanted to find high ground. He says old Hilton hands even have a term for accommodating storm refugees in its 29-story tower: "vertical evacuation." Instead, the Stanford University graduate who once taught English in Japan and worked in hotels on the West Coast before moving to New Orleans two years ago, survived the most harrowing week of his life.

FRIDAY, AUG. 26
A COLLEAGUE, David Birch, hands Sawyers a weather report, saying "Katrina is aiming right for us."

wife, Jayme, gather up their valuables and three cats and prepare to head back to the hotel. But he's uneasy about his wife staying. "Baby, I don't want you to come," he tells her. "I don't have a good feeling about this. I think you should evacuate." She leaves for Little Rock, Ark.

MONDAY, AUG. 29
BY 8 A.M., THE RAIN is thundering down, the wind is howling, and the sky is growing dark. On an open-air third level of the hotel, a cabana rips loose from its moorings, shattering a glass door and exposing an area that's being used to serve meals. "Now that's compromised," Sawyers says. Water covers the floor, and the wind roars. As the storm intensifies, the aluminum roof of the health club starts peeling back. The water pours in. Employees with flashlights guide the 450 people there through darkened hallways and stairwells to the first-floor grand ballroom.

Returning to the third floor, where people are grabbing breakfast, Sawyers shouts at guests to stand clear of the windows, where some are watching the storm rage. Only a few rooms have their

TOP: BY AP/WIDEWORLD; BOTTOM: COURTESY OF HILTONHOTELS.COM





Evacuate [or follow MTA guidance] and stay?

❖ One alternative is recognized faster than another, infer that it has the higher value.

❖ Which of two alternatives has the higher value – Stay or leave?

❖ 2700 employees survive.

❖ Rick Rescorla
Director of Security at
Morgan Stanley WTC
9/11



Sensing and mitigating emerging risks

Risk sensing provides decision makers with real-time awareness on issues that are likely to affect an organizations reputation.

- ❖ **Real-time:** Efficiently processing and synthesizing real-time intelligence, such as pattern detection and recognition, for real-time reporting.
- ❖ **Forward-looking:** Taking an outside-in view to supplement findings and assessing strategic, operational and tactical business drivers in the future.
- ❖ **Early warning and triggers:** Increasing signal-to-noise ratio to detect weak and early warning signals and avoid surprises.
- ❖ **Actionable insight:** Operational insights that can be easily integrated and can have direct positive effect on operations.



Sensing and mitigating emerging risks

Reputation@Risk Survey Highlights:

The top underlying drivers of reputation risk were found to be related to ethics and integrity (55%), such as fraud, bribery and corruption; followed by security risks (45%), both physical and cyber; and product and service risks (43%).

Third-party relationships are another rapidly emerging risk area, as companies are increasingly being held accountable for the actions of their suppliers and vendors.

<http://deloitte.wsj.com/riskandcompliance/2015/02/17/risk-sensing-a-tool-to-address-reputation-risks/>



Risk Intelligence

Mitroff's Five Stages of Crisis Management





Sensing and mitigating emerging risks

- ❖ What process do you use to gather real-time, risk-related intelligence?
- ❖ What are the pre-identified early warning signs and triggers that you use to detect emerging risks?
- ❖ What level of event triggers your team to respond to an early warning of an emerging risk?



Scenarios Gaming

Purpose

Understand and be able to use scenarios-based micro-games to strengthen risk-sensing, risk intelligence collection, assessment and vulnerability reduction processes.



Scenarios are...

- ❖ What **could** happen, not what **will** happen.
- ❖ A starting point for discussion.
- ❖ Plausible hypotheses about the ways in which the forces external to us might evolve to impact us.
- ❖ Stories which allow us to consider challenges and options, e.g.: What if X happens, what's our strategy? What if Y happens, what's our strategy? And,
- ❖ How does current or intended strategy (positioning, business model, etc.) hold up in each scenario ?
- ❖ Intended to focus on **options not actions**. Asks the question: “ what might we need to do?” not the questions: “ what will we do?” or “ how will we do it?”



Why Scenarios?

- **Scenarios** = wind-tunnel articulating small set of what could happen TO you independently of your will
- **Options** = alternative possible courses of action
- **Strategy** = what YOU decide to do
- **Scenario planning** = manufacturing & using scenarios to generate/assess options and inform strategy

COPYRIGHT – OXFORD
SCENARIOS PROGRAMME



Why Scenarios?

- ❖ Learning is deeper and more durable when it's effortful.
- ❖ The popular notion that you learn better with your preferred *learning style* is not supported by empirical research.
- ❖ If you (the student) practice elaboration (e.g. giving new material meaning by expressing it in your own words) the stronger your grasp of the new learning will be.

Peter Brown, *Make It Stick: The Science of Successful Learning*.
(Cambridge: Harvard University Press, 2014).



Why Scenarios?

“People who worry about problems that others are not worrying about are irritating and are disparaged after the event.

..People who were right when others were wrong are even more irritating.”

John Gray

Professor of European Political Thought

London School of Economics



Scenarios Gaming Process

1. Identify plausible event scenarios which present the potential to produce negative consequences to the organization.
2. Brainstorm/game-out the types of negative consequences that each scenario could produce.
3. Brainstorm/game-out methods to reduce or eliminate the impact of each of the negative consequences.
4. List examples of warning-signs which might exist in advance of each event.
5. List the person responsible to watch for these warning signs and to whom they are responsible to report to when the warning signs are noticed.
6. List the person responsible to act on these warning notifications, and what actions they ought to take when notified.



Crisis decision-making micro-games

- ❖ Present a problem – Problem Based Learning
- ❖ Facilitate the game
- ❖ Encourage brainstorming
- ❖ Identify and adjust for bias in the decision-cycle
- ❖ Guide the process to fast & frugal decision-making
- ❖ Close with plus/delta



Crisis decision-advantage micro-games

- ❖ Suspend judgment.
- ❖ Focus on strategic issues.
- ❖ Brainstorm.
- ❖ Apply fast & frugal decision-making.
- ❖ Focus on identifying and adjusting for bias in the decision-cycle.

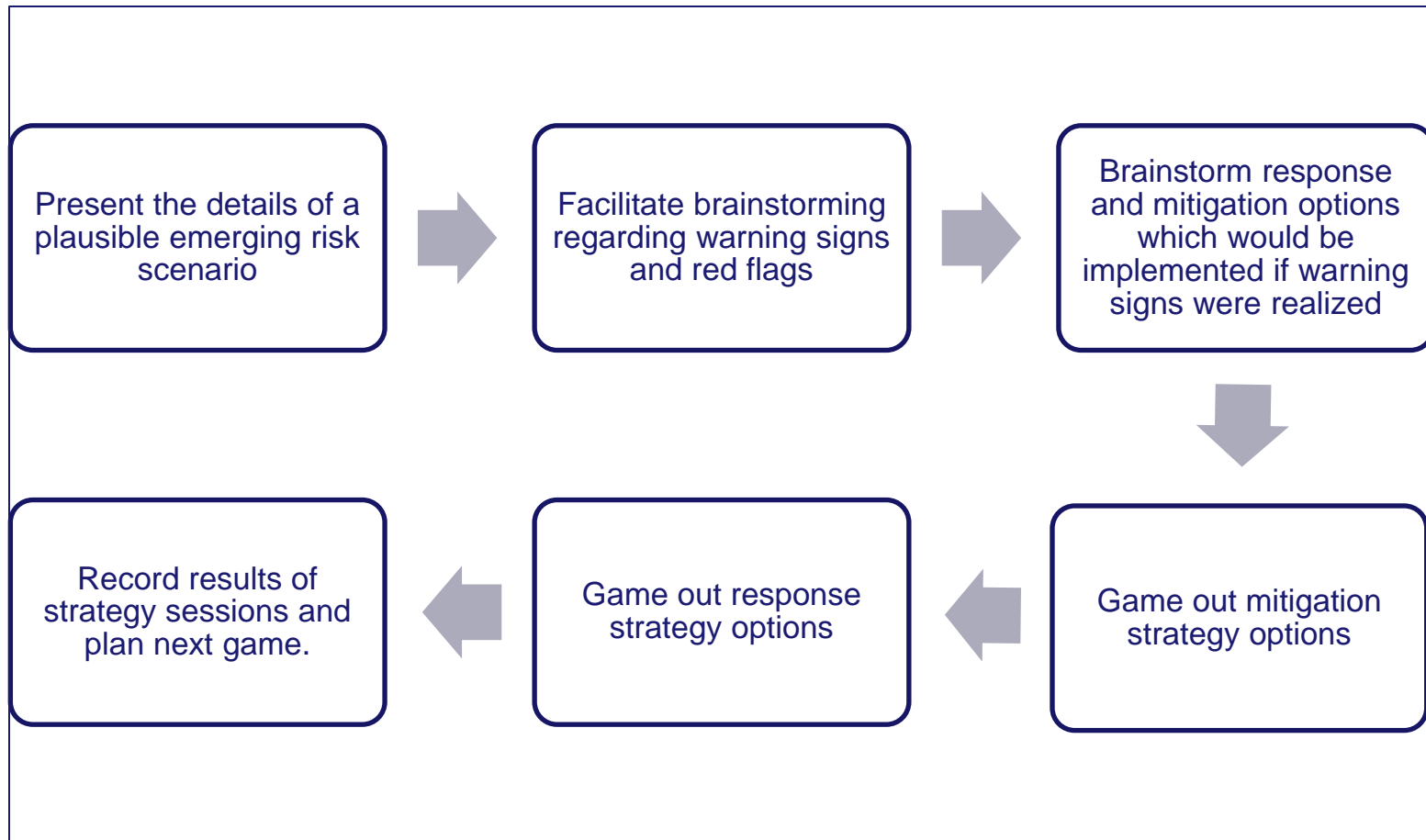


Keys to facilitation

- ❖ Talk no more than anyone else
- ❖ Ok not to be expert
- ❖ Guide and steer, don't lead
- ❖ Expect struggle
- ❖ Engage those not involved
- ❖ Challenge way out ideas

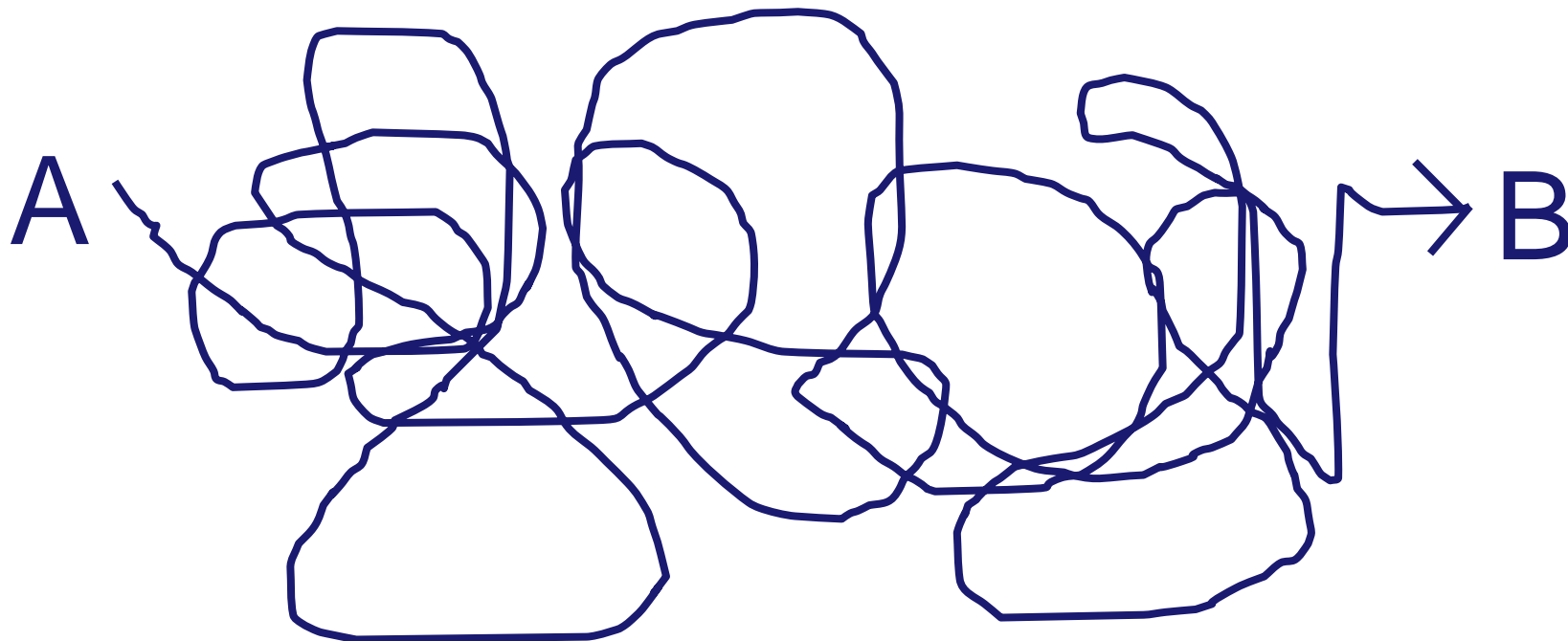


Basic game flow





Efficiency and effectiveness





Quantum Shift

① *Back drop and triggers*

- Global economic stagnation – new normal
 - US economy ↓
 - State of California ↓
- Population ↑
- Student debt ↑

❖ Private funding esp. silicon valley ↑

❖ Brings online education debate front & center

② *Online digital learning platform launched at scale w/ Google*

③ *digital revolution (digital economy, automation) accelerates placing new demands on educational institutions (x-generation, short cycles)*

④ *Early adopters become COE/global leaders in online education platforms*



Quantum Shift

Essence:

- Clicks not bricks
- Sociable, adaptive

Risk profile:

...shifting from...

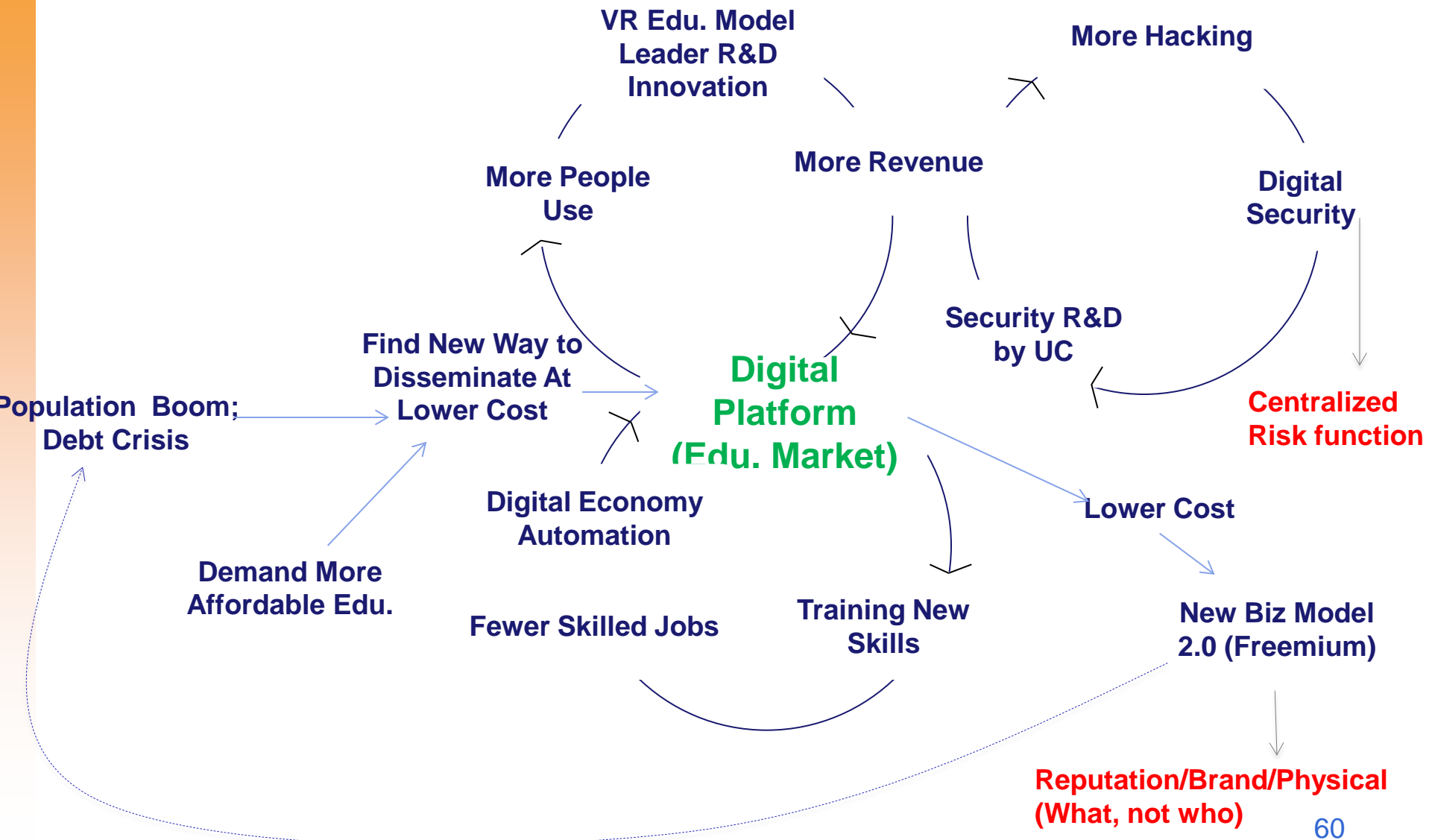
- Physical domain (mass shootings/ earthquakes)

...to...

- Virtual world (cyber attacks, business continuity, hacktivism)
- Evolving brand/reputation management issues



Quantum Shift







Next Steps

Inculcate risk sensing, sensemaking and micro-gaming into strategic planning.



Summary

- Key Issues, Challenges, Opportunities and Priorities
- Closing Comments



Sources

- Gigerenzer and Goldstein
 - *Reasoning the Fast and Frugal Way: Models of Bounded Rationality, Psychological Review 103 (1996), pp. 650–669*
- Heuer, Richard
 - *Psychology of Intelligence Analysis*
- Covello Vince., McCallum D. & Pavlova M.
 - *Effective Risk Communications*
- Moss, David.
 - *When all Else Fails: Government as the Ultimate Risk Manager*
- Van Saun, Phillip.
 - *Failure is An Option: A Primer and Guide For Managing Crises*



Chance favors the prepared mind

- “When anyone asks me how I can best describe my nearly forty years at sea, I merely say, *uneventful...*” *E.J. Smith, Captain RMS Titanic*





Thank you