Resilience and Graceful Failure

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I DON'T BELIEVE IN GLOBAL WARMING
The image shows a diagram illustrating the concepts of development, shock or stress, resilience, and collapse over time. The diagram indicates that when faced with shock or stress, there are options to move towards resilience or collapse, depending on the response or countering actions taken. The photo on the right side of the image depicts a child in a flooded area, possibly experiencing the aftermath of a natural disaster, reinforcing the importance of resilience in such situations.
Post Event Reviews

• A unique forensic methodology
• Unbiased event-level learning
• Understanding why natural hazard events become disasters
• Provide practical recommendations for the future
The What
Infrastructure & Ecosystems

The How
Cultural and Legal Norms

The Who
People and Organizations
Characteristics of Resilience

- Able to learn
- Resourceful
- Flexible
- Diverse
- Integrated
- Transparent
- Equitable and inclusive
- Robust (and able to fail safely)
- Redundant and/or modular

"It's your reaction to adversity, not adversity itself that determines how your life's story will develop." – Dieter F. Uchtdorf
Key Insights

• We need to critically assess where we are building and how we are incentivizing risk
• But also recognize that we can’t avoid risk, so we need to interact without environment in ways adapted to that risk
• Infrastructure only works to its design threshold, *at best*
• Imagine how bad it could be and plan for worse
Graceful Failure

Events become disasters because of failure
• Planning failure
• Regulatory framework failure
• Maintenance failure
• Structural failure
• Communications failure
• Failure to anticipate and work with change
• …. and failure of imagination.

A key element of resilience is recognizing that things will fail, and planning for that.

“What if…” should be the mantra of every resilience professional.
An interesting failures (that we can learn from!)

Boulder mountain roads
7 road from plains to mountain communities
6 of 7 were along mountain creeks

Take-home lesson:
Remain aware of the failure modality
Redundancy doesn’t help if ALL redundant systems have the same weakness
and another interesting failure....
Take-home lesson:

Physical solutions that don’t also take into account...
• .... the regulatory framework needed to make them work
• .... human behavior and how your “solution” could be mis-used
• .... required maintenance (and a clear plan for who will do it and how it will be paid for)
• ..... and a clear understanding of the limitation of the solutions and plans for what happens when they fail....

ARE NOT ACTUALLY SOLUTIONS!
Take-home lesson: We need to recognize that “anomalous” events probably aren’t, and actively use them to build our resilience.
We need to think more about interconnections if we really want to build resilience.