

Using Turbulence Theory as a Metaphor in a Volatile World

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A photograph of the Golden Gate Bridge at night, illuminated by city lights, with a dark blue sky and water. The bridge's towers and suspension cables are visible, extending from the left side of the frame towards the center.

Topics in our exploration

1. The origins of Turbulence Theory
2. The 4 levels of Turbulence and the Turbulence Gauge
3. Underlying dynamics of Turbulence Theory
4. Turbulence Theory in context

1. *Origins: Turbulence Theory Started with the study of innovation in schools: (Gross 1998)*

- ◆ No matter how the school innovated, there always seemed to be a level of disturbance.
- ◆ Schools seemed to experience different levels of disturbance
- ◆ Schools exhibited different responses to disturbance.
- ◆ Each of these were anomalies, not accounted for in linear models of innovation. Similar to Kuhn's work (1962) regarding scientific revolutions.





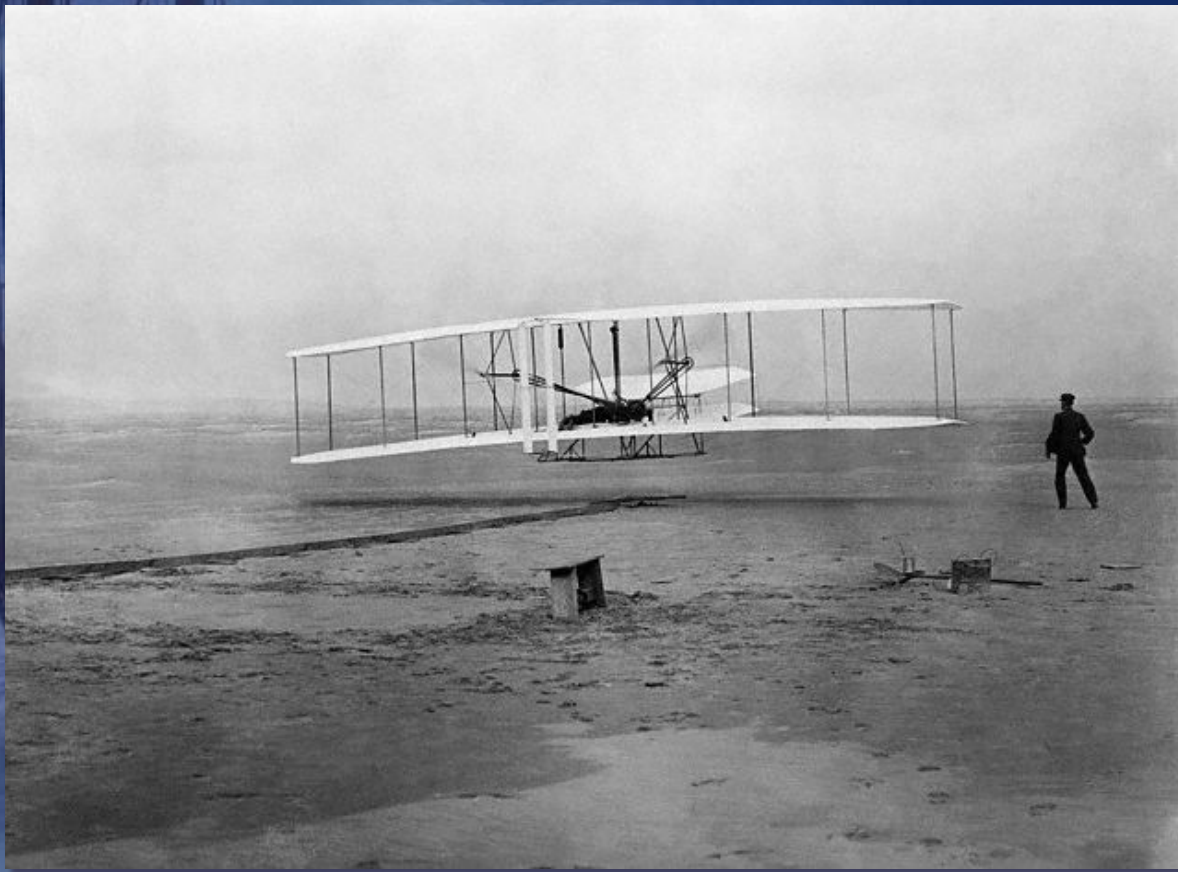
The problem was complex:

- ◆ How might the levels of disturbance be described so that different degrees of challenge can be compared?
- ◆ How can we see the emotional strength of the disturbance?
- ◆ How can the school look at its own disturbance in a measured way so that reasoned action can be more likely?

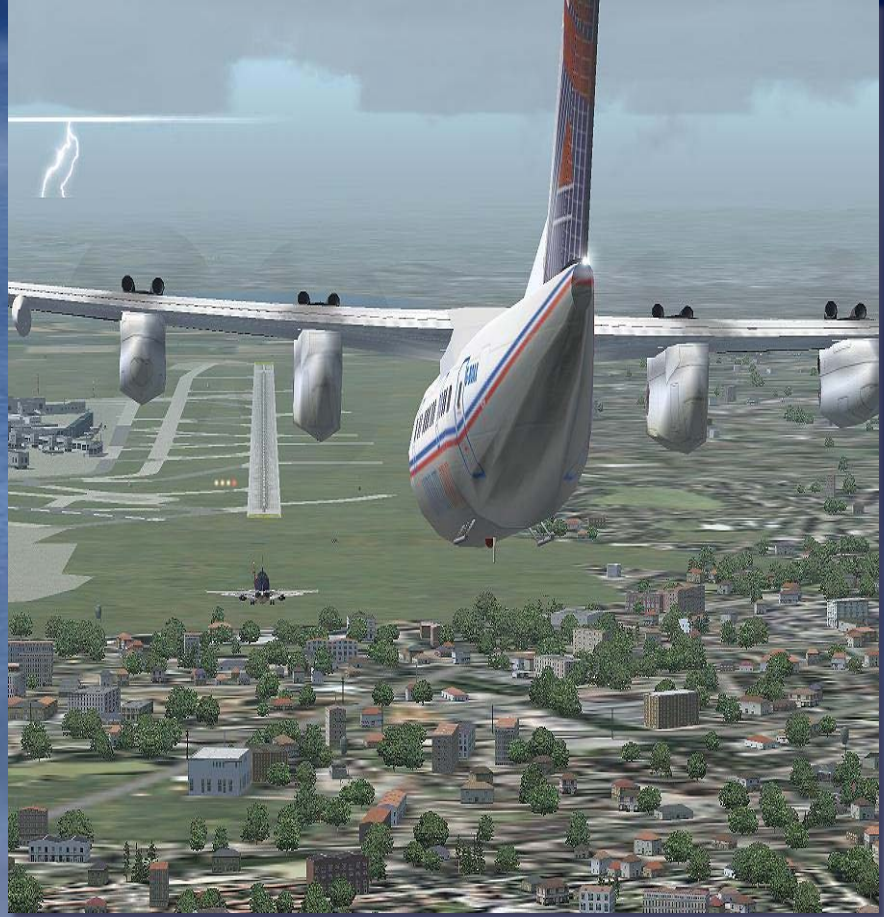
A blue-tinted photograph of the Golden Gate Bridge, showing the suspension towers and cables extending over the water. The image is used as a background for the title text.

2. The 4 Levels of Turbulence and the Turbulence Gauge

*These disturbances seemed
similar to the sensation of
flight*



*Specifically, they seemed like
Turbulent flight experiences
(Time for a little personal experience...)*





It turns out that pilots are trained to view turbulence in 4 levels:

- ◆ *Light:* little or no movement of the craft
- ◆ *Moderate:* very noticeable waves
- ◆ *Severe:* strong gusts that threaten control of the craft.
- ◆ *Extreme:* forces so great that control is lost and structural damage to the craft occurs.

(Lester 1994. Turbulence: A new perspective for pilots)



Making the transition from flight to educating organizations:

- ◆ The 4 levels of turbulence made a strong match to existing disturbances in innovating schools.
- ◆ The 4 levels of turbulence also started to explain conditions in educating organizations in general, even those that were not innovating.
- ◆ A device called a Turbulence Gauge was designed to help describe how Turbulent conditions currently were and where they might go next.

The Turbulence Gauge

Degree of Turbulence	General Definition	Applied to this situation:
Light	Little or no disruption	
Moderate	Widespread awareness of the issue	
Severe	A sense of crisis	
Extreme	Structural damage to institution	

To use the Turbulence Gauge, Describe current conditions at the appropriate level under the “Applied to this situation” column:

Degree of Turbulence	General Definition	Applied to this situation:
Light	Little or no disruption	
Moderate	Widespread awareness of the issue	
Severe	A sense of crisis	Our leader just walked-out! Everyone is upset and no one knows what will happen next.
Extreme	Structural damage to reform	

Next, fill-in the remaining rows of that column:

Degree of Turbulence	General Definition	Applied to this situation:
Light	Little or no disruption	Our leader is leaving but a clear plan is working well. We are not concerned.
Moderate	Widespread awareness of the issue	Our leader is leaving, there is a plan, we need to be more involved in all stages of the process.
Severe	A sense of crisis	Our leader just walked-out! Everyone is upset and no one knows what will happen next.
Extreme	Structural damage to reform	No one knows what to do, no one is speaking to us and we suspect the worst!

With the Turbulence Gauge completed, we can compare our current condition to greater and lesser levels of turbulence, allowing us to make better predictions.

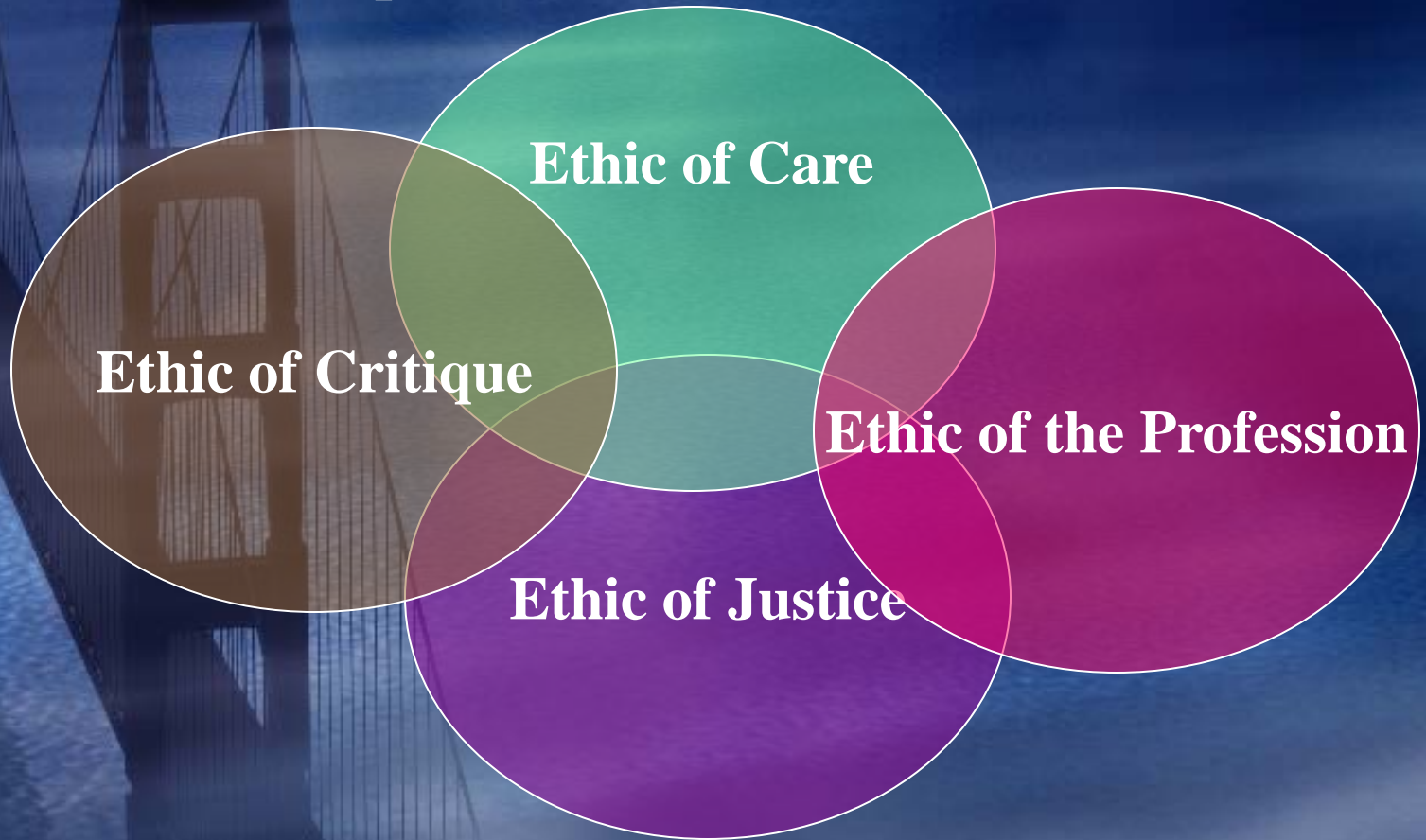
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*But, the question is, whose point of view is reflected in this Turbulence Gauge?
(more on this when we look at Positionality)*

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Multiple Ethical Paradigms

(Shapiro and Stefkovich 2005)



Step Three:

Consider how an action resulting from the ethical paradigms may affect the turbulence level.

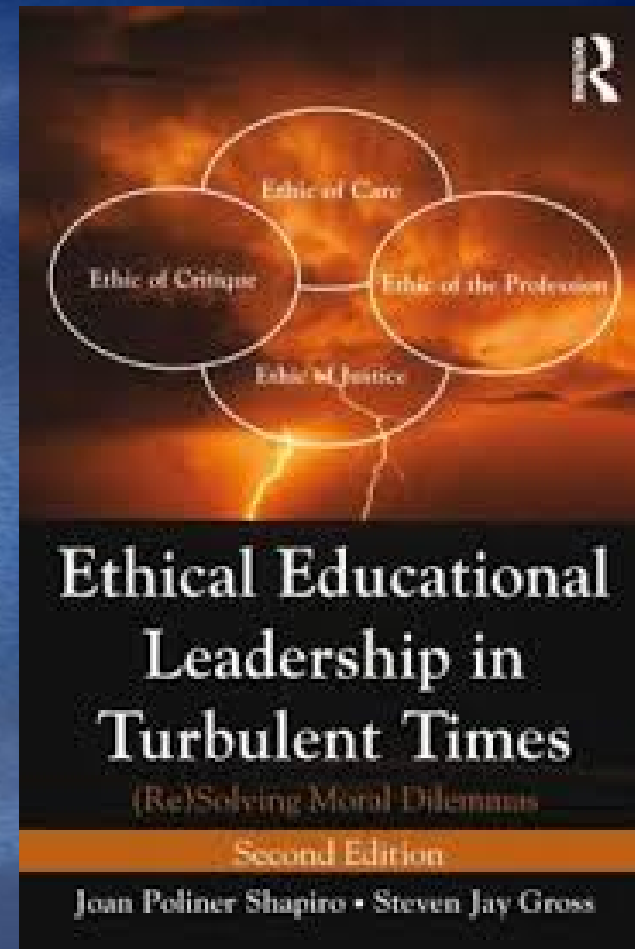
Step One:

Consider the level of Turbulence in the dilemma.

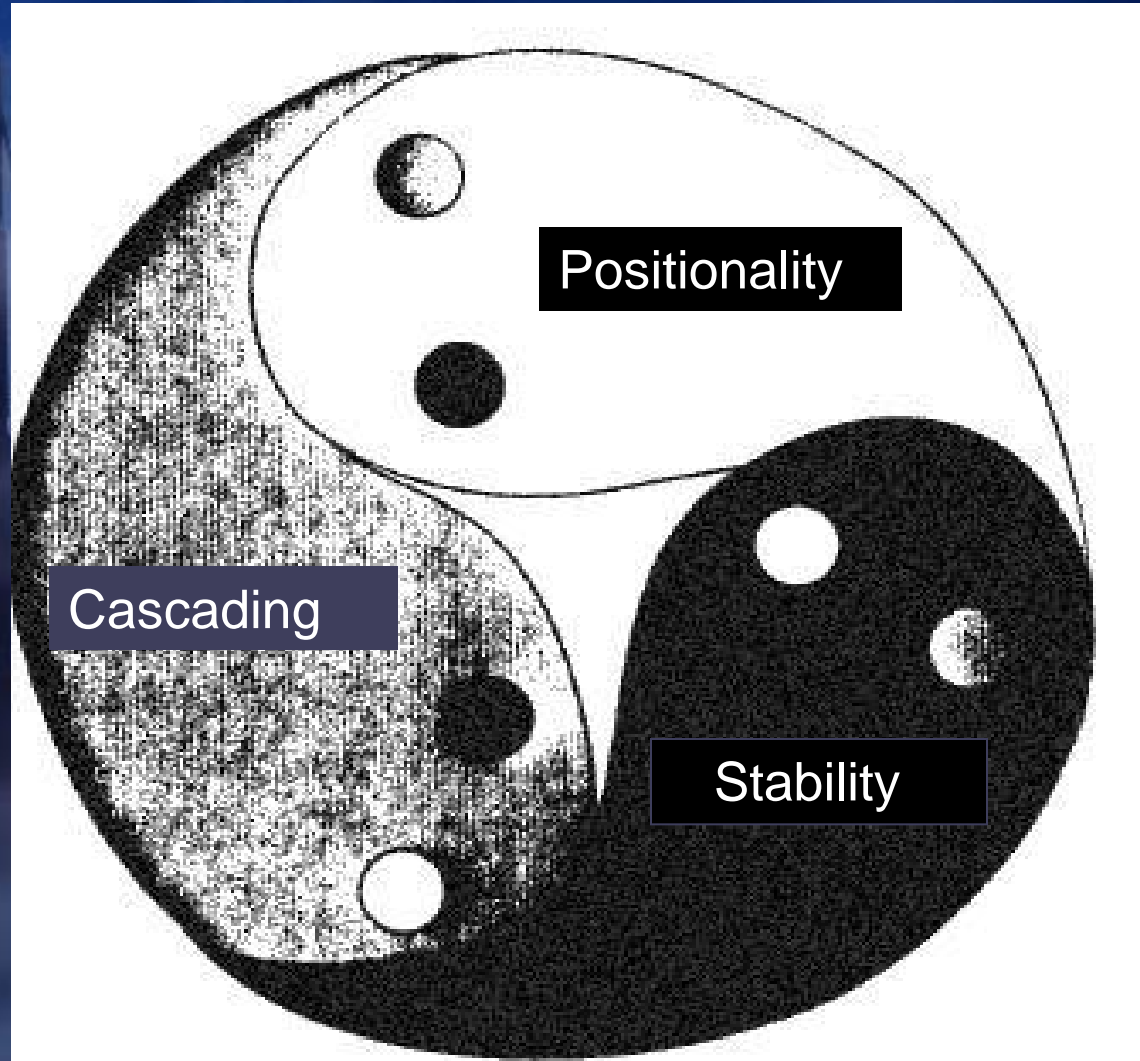
Step Two: Think through all of the ethical paradigms. Which one(s) best inform your decision?


Using the Multiple Ethical Paradigms and Turbulence Theory as a system.

(Shapiro and Gross 2007, 2013)

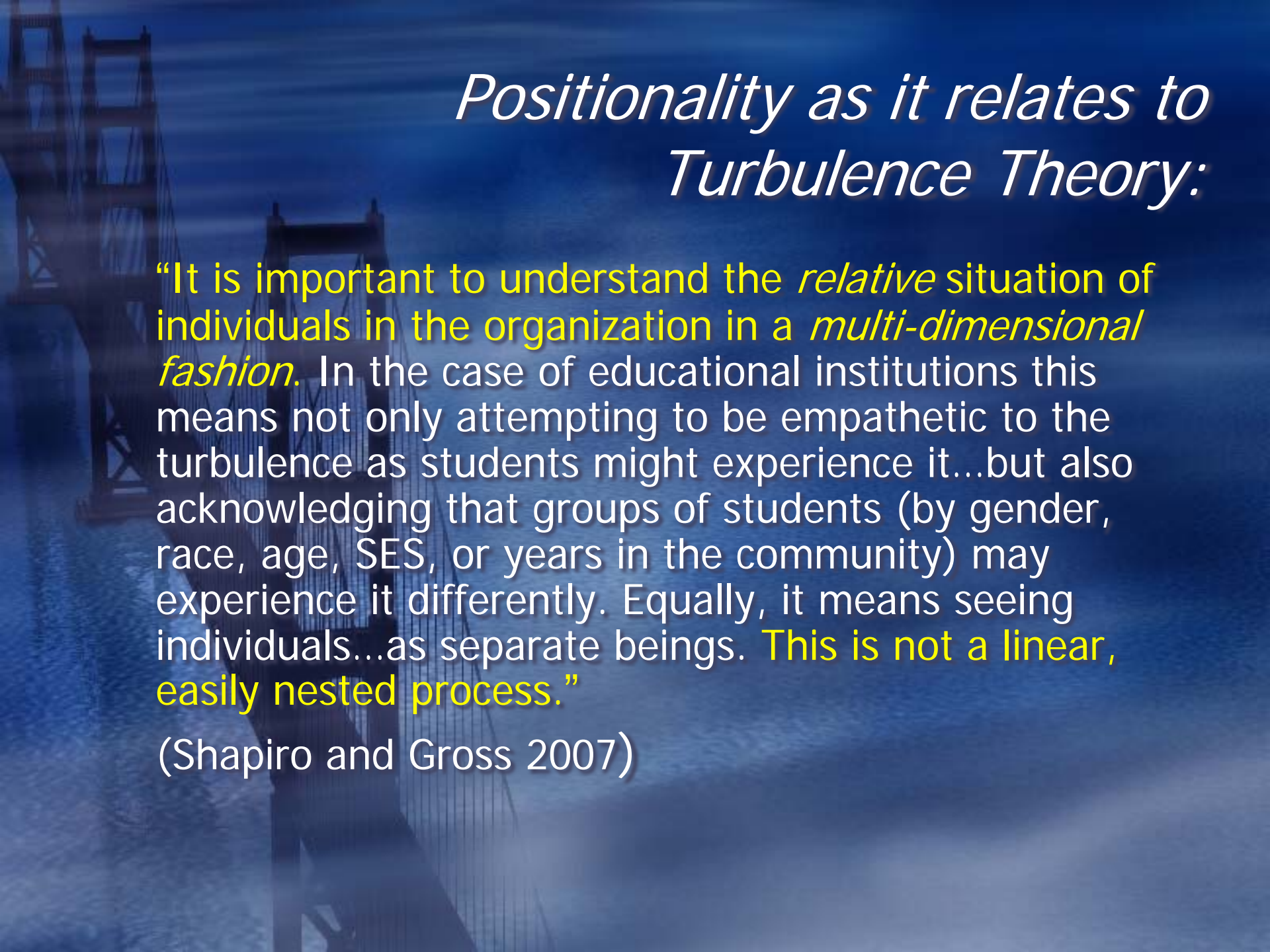


3. *The Underlying Dynamics of Turbulence*



A blue-tinted photograph of the Golden Gate Bridge, showing the suspension towers and cables extending over the water. The image is used as a background for the text.

*Positionality:
All Turbulence is not felt to the same
degree by everyone in the organization.*



Positionality as it relates to Turbulence Theory:

“It is important to understand the *relative* situation of individuals in the organization in a *multi-dimensional fashion*. In the case of educational institutions this means not only attempting to be empathetic to the turbulence as students might experience it...but also acknowledging that groups of students (by gender, race, age, SES, or years in the community) may experience it differently. Equally, it means seeing individuals...as separate beings. **This is not a linear, easily nested process.**”

(Shapiro and Gross 2007)

*Positionality means that the Turbulence
one experiences depends upon where
you are in a given situation:*





*There is a serious side to
positionality.*

- ◆ We can consider the turbulence experienced by others in our organization.
- ◆ We can act to protect those most at risk.

Think of the difference in position during Hurricane Katrina, a clear case of extreme turbulence, and how it was handled.



Positionality and Lightning Rods: More complex than it seems at first...



The background of the slide is a photograph of the Golden Gate Bridge at night. The bridge's towers and suspension cables are silhouetted against a dark blue, slightly hazy sky. The water below is dark and reflects some of the bridge's lights. The overall mood is serene and contemplative.

Questions to illuminate Positionality during Turbulence

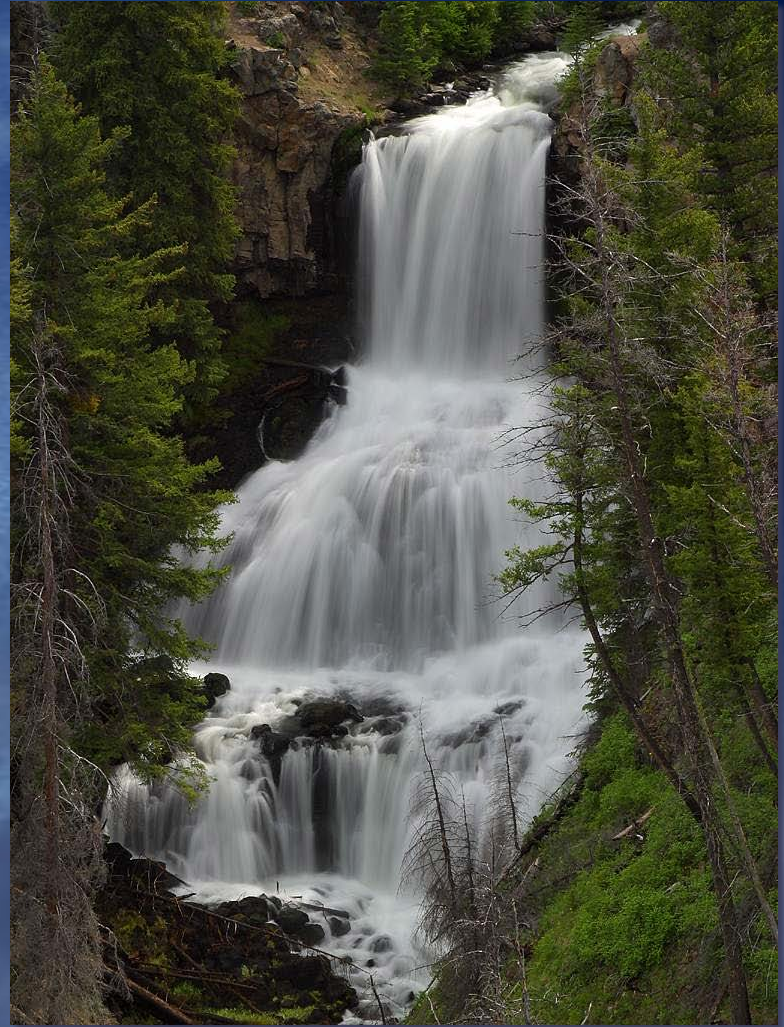
- ◆ What different groups exist in our organizations? How might the current turbulence affect each?
- ◆ What different demographics exist? What might their perspective be?
- ◆ What do we know about individual situations? How might this alter the way this turbulence is perceived?

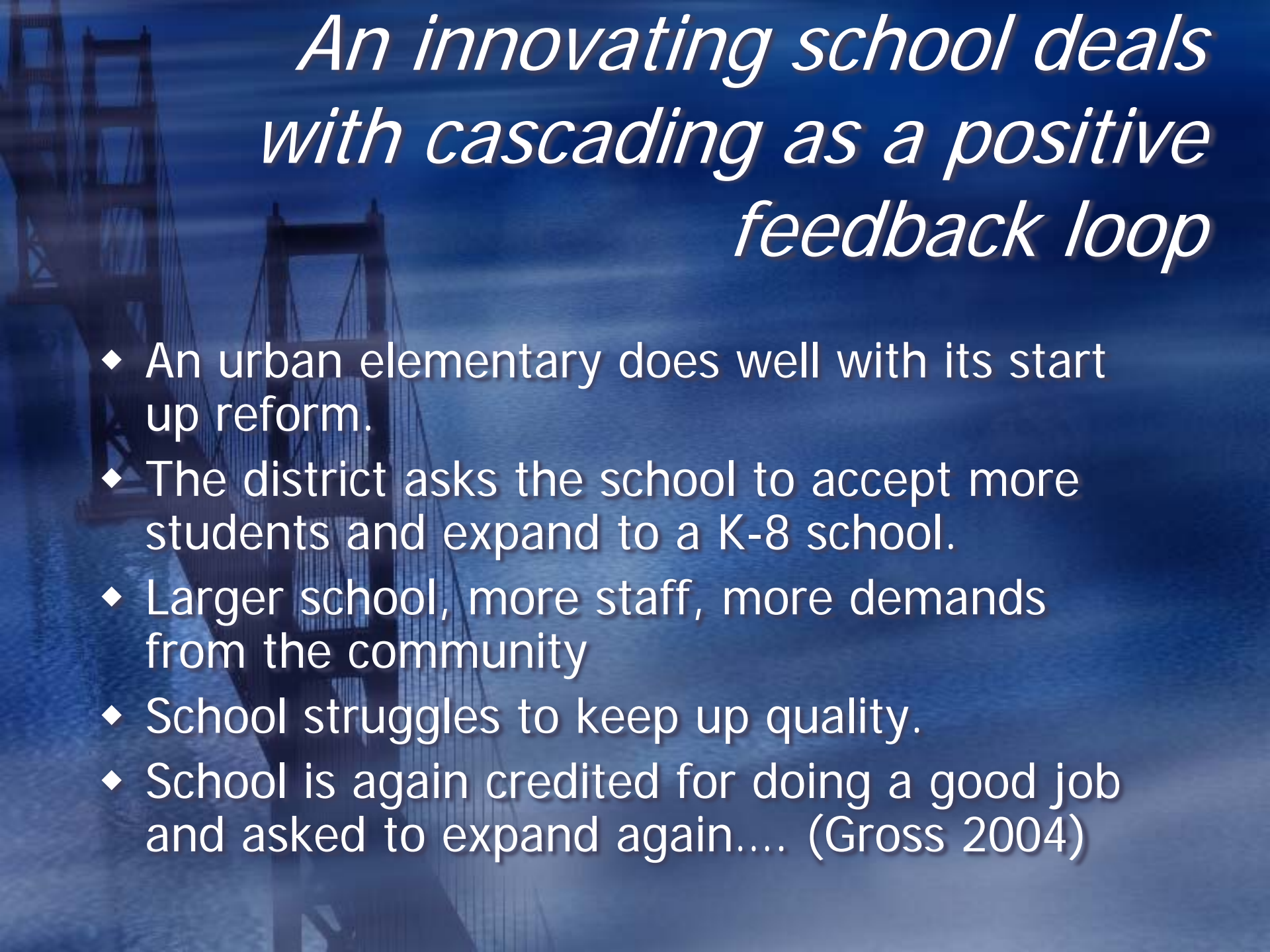
(Shapiro and Gross 2007)

Returning to the Turbulence Gauge for just a minute. Since we all see turbulence from our own position, any Turbulence Gauge will reflect the person you have in mind when you constructed it.

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*Cascading:
Turbulence feeding upon itself*



The background of the slide is a photograph of the Golden Gate Bridge in San Francisco, taken at dusk or dawn. The bridge's towers and suspension cables are silhouetted against a dark blue sky with some light clouds. The water of the bay is visible in the foreground, reflecting the ambient light. The overall mood is serene and contemplative.

An innovating school deals with cascading as a positive feedback loop

- ◆ An urban elementary does well with its start up reform.
- ◆ The district asks the school to accept more students and expand to a K-8 school.
- ◆ Larger school, more staff, more demands from the community
- ◆ School struggles to keep up quality.
- ◆ School is again credited for doing a good job and asked to expand again.... (Gross 2004)

A blue-tinted photograph of the Golden Gate Bridge, showing the suspension towers and cables extending over the water. The image is used as a background for the text.

*At other times cascading represents
the accumulation of coinciding
forces.*



Cascading in a School Setting

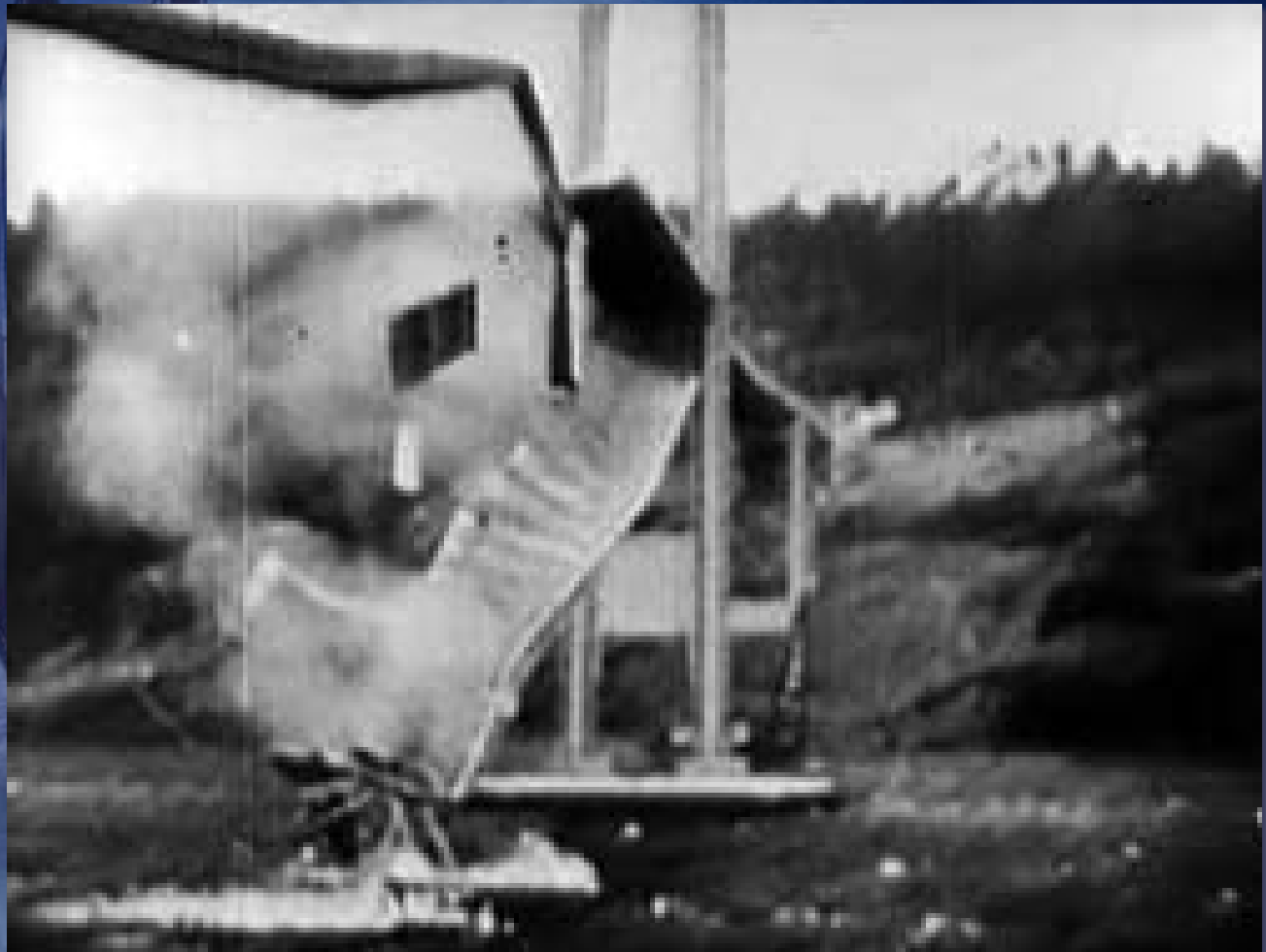
- ◆ First, there is a teachers strike.
- ◆ Then, someone files suit against the district because of alleged discrimination.
- ◆ The state comes in and audits the books because they are suspicious.
- ◆ You don't make AYP and your school is now on the need to improve list.
- ◆ *Not only does each of these take a toll, they compound, one upon another to make the total impact of turbulence much greater.*

Stability



*Galloping Gertie:
The Tacoma Narrows Bridge Disaster*

(Levy and Salvadori 2002)

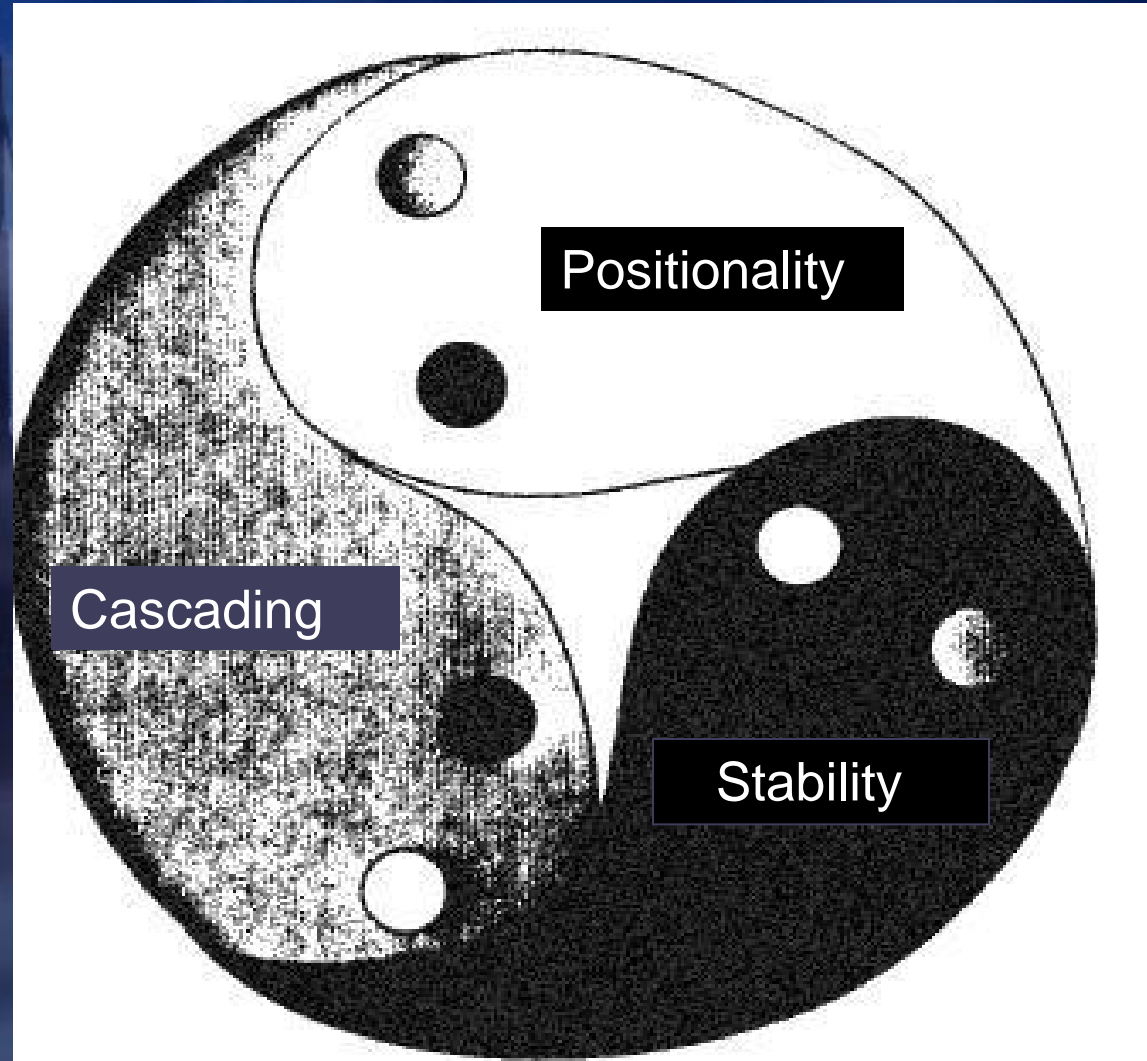


A gifted leader stabilizes his innovative high school during severe turbulence (Gross 2001)

- ◆ **Dialogue**- a commitment to continuous communication.
- ◆ **Democracy**- equality and shared power
- ◆ **Innovation**- invention and refinement to promote the mission



When The Underlying Dynamics of Turbulence Combine...



The Dustbowl of the 1930's:

- ◆ Farming & over use of the land
 - ◆ Land speculation
 - ◆ Dependence on heavy rains
 - ◆ Drought
 - ◆ Depression
 - ◆ Disaster
- (Egan 2006)

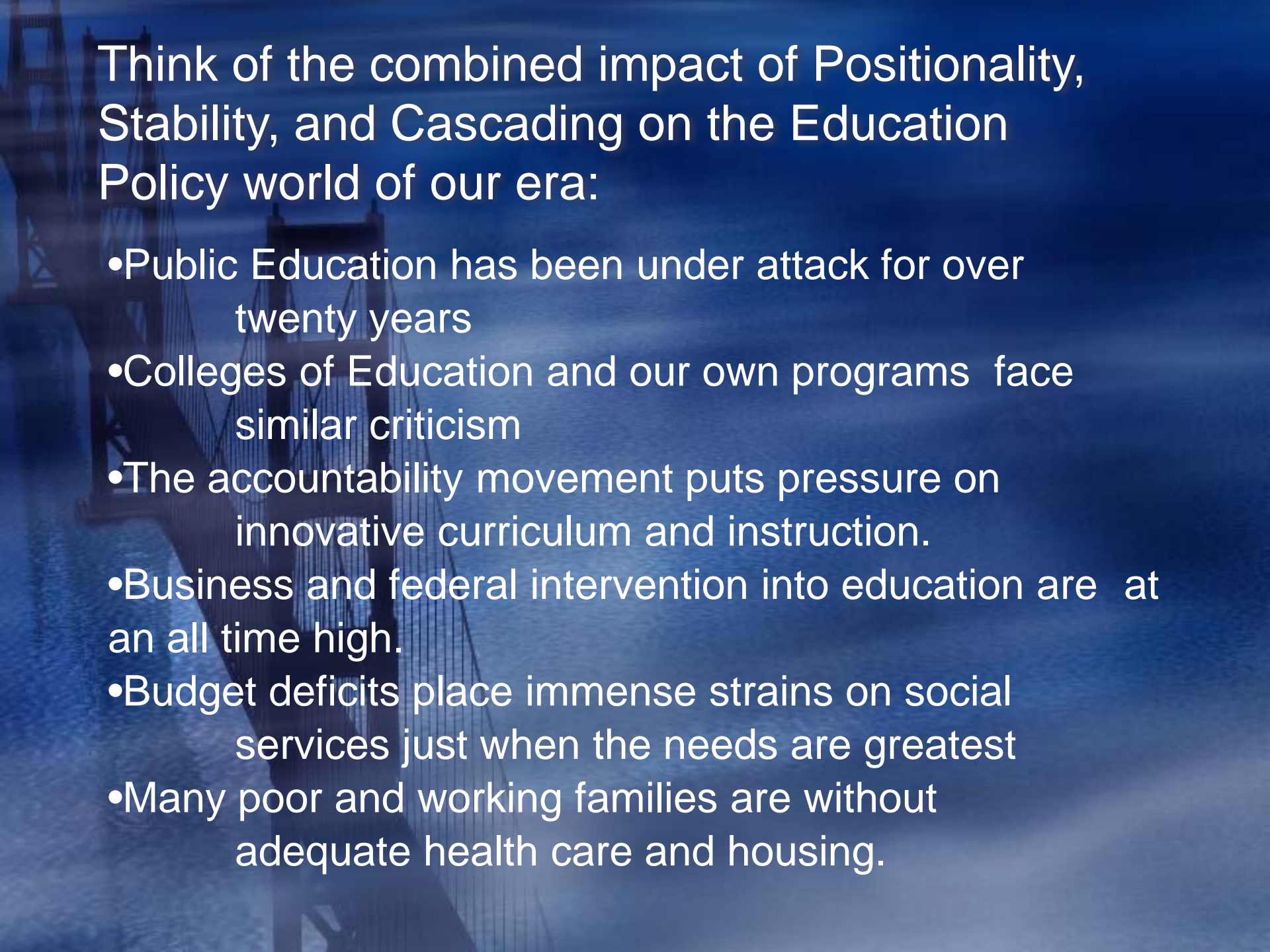




Positionality, Cascading, and Stability ignite at one reforming school leading to Extreme Turbulence

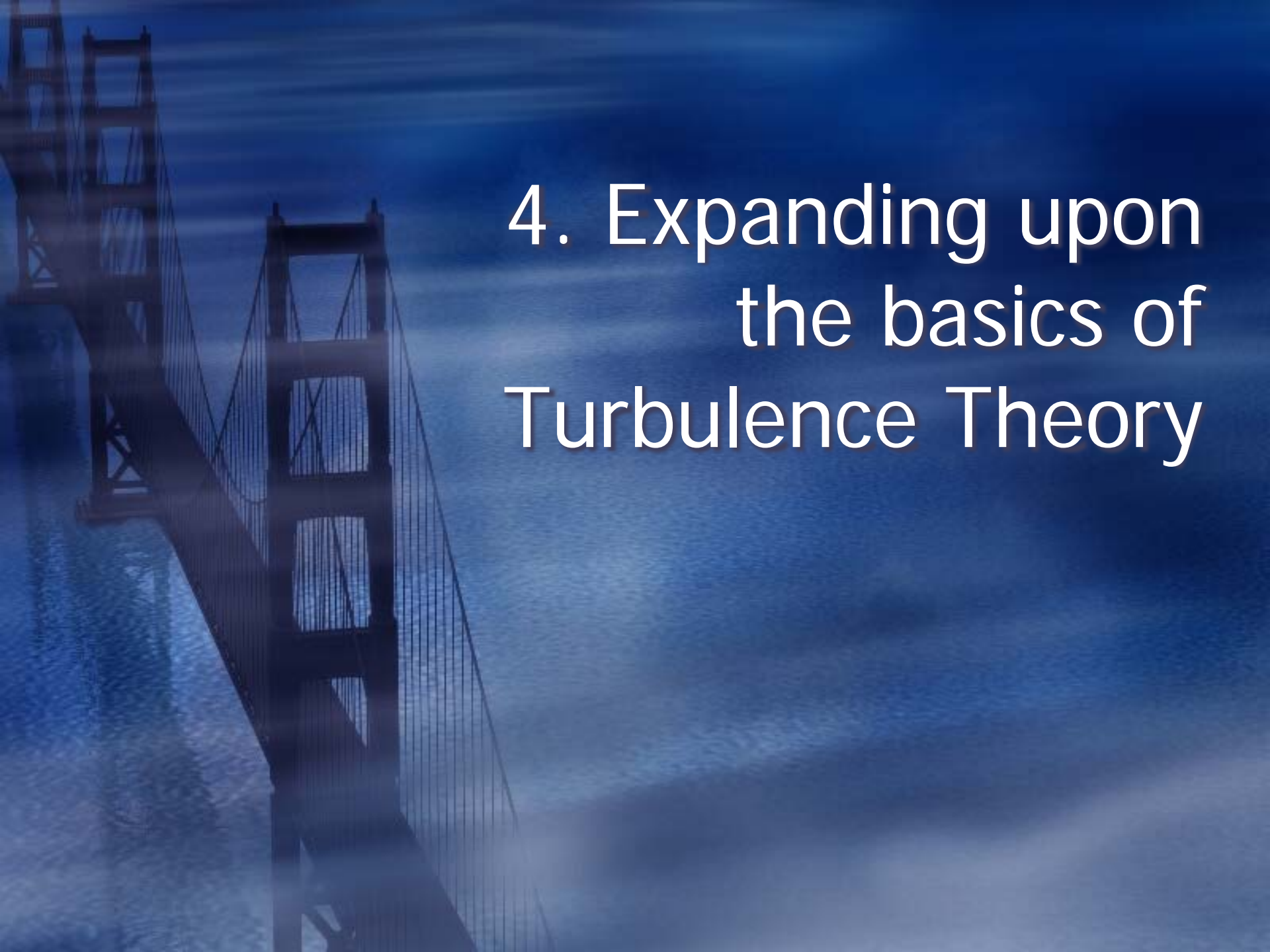
- ◆ The supporting superintendent leaves.
- ◆ Foundation funding runs out
- ◆ Two additional grade levels are added
- ◆ New staff comes who do not subscribe to the reform plan.
- ◆ New families are assigned to the school who do not believe in the reform effort
- ◆ One grade level fails the high stakes test
- ◆ The founding principal plans to retire asap.

(Gross 2002)



Think of the combined impact of Positionality, Stability, and Cascading on the Education Policy world of our era:

- Public Education has been under attack for over twenty years
- Colleges of Education and our own programs face similar criticism
- The accountability movement puts pressure on innovative curriculum and instruction.
- Business and federal intervention into education are at an all time high.
- Budget deficits place immense strains on social services just when the needs are greatest
- Many poor and working families are without adequate health care and housing.

A photograph of the Golden Gate Bridge at night, illuminated by city lights. The bridge's towers and suspension cables are visible against a dark blue sky and water. The text is overlaid on the right side of the image.

4. Expanding upon the basics of Turbulence Theory



Please note:

- ◆ There is always some level of turbulence, even if it is quite light.
- ◆ Without turbulence at some level, airplane flight would not be possible. Lift does not exist in a vacuum.

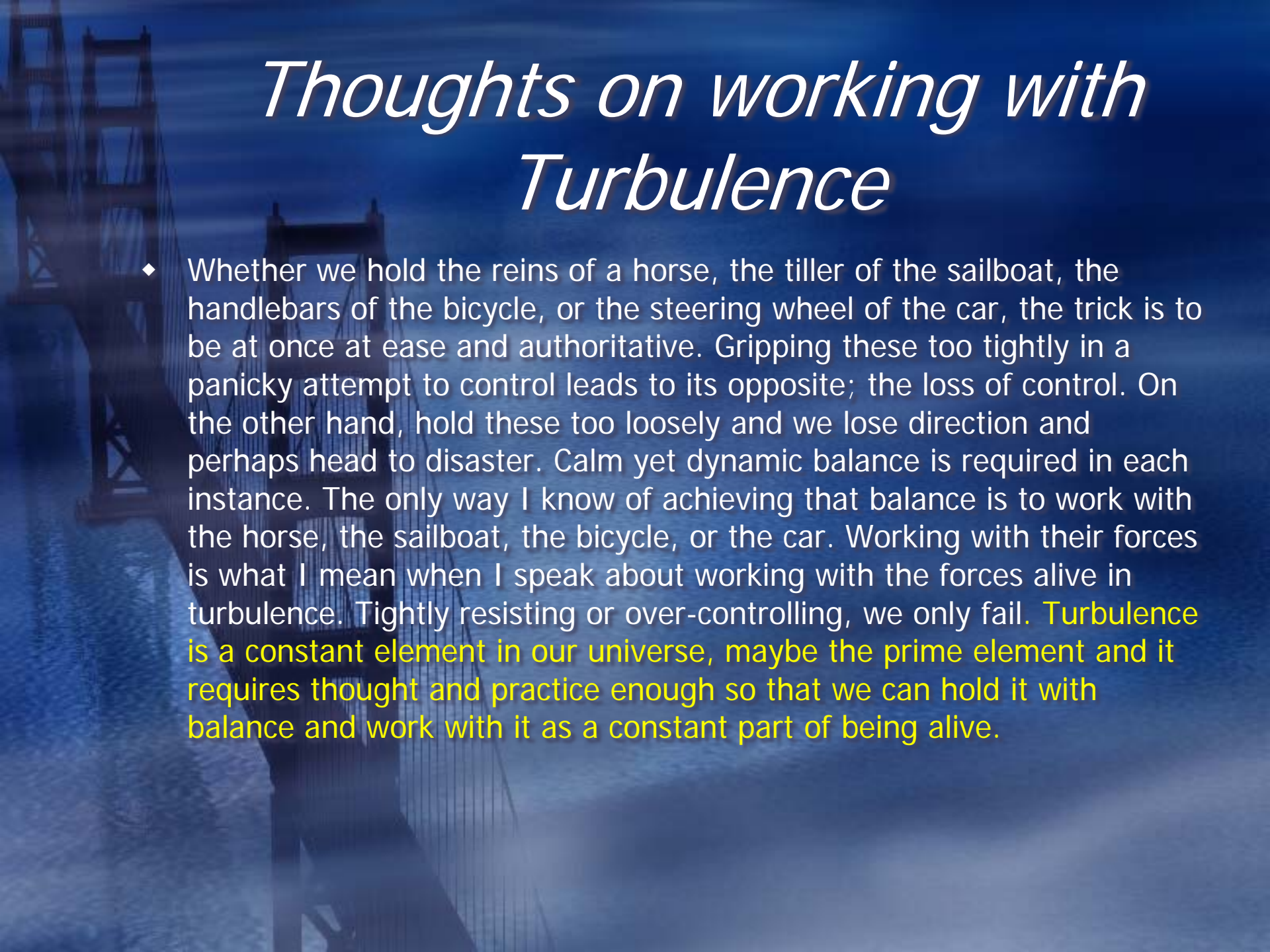
(Inspired by a most useful critique from C. Larson at UCEA annual conference 2003)



The Positive Nature of Turbulence

- ◆ Gryskiewicz (1999) *Positive Turbulence: Developing Climates for Creativity, Innovation, and Renewal.*

This book speaks of the role of turbulence in refreshing ideas in business organizations.



Thoughts on working with Turbulence

- ◆ Whether we hold the reins of a horse, the tiller of the sailboat, the handlebars of the bicycle, or the steering wheel of the car, the trick is to be at once at ease and authoritative. Gripping these too tightly in a panicky attempt to control leads to its opposite; the loss of control. On the other hand, hold these too loosely and we lose direction and perhaps head to disaster. Calm yet dynamic balance is required in each instance. The only way I know of achieving that balance is to work with the horse, the sailboat, the bicycle, or the car. Working with their forces is what I mean when I speak about working with the forces alive in turbulence. Tightly resisting or over-controlling, we only fail. **Turbulence is a constant element in our universe, maybe the prime element and it requires thought and practice enough so that we can hold it with balance and work with it as a constant part of being alive.**