

Institute for Water Resources  
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# Risk Perception

## *Module 2 – RC for FRM course*

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**PLANNING SMART**  
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**TECHNICAL**  
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# Definition of Risk

**Risk = *Probability x Consequences***

*(as calculated by Scientist/Engineer)*



# SUBJECTIVE ^ Definition of Risk

**Risk = *Hazard & Outrage***

*(as perceived / felt by individuals)*

- More comprehensive
- What people care about
- Value laden => tolerable risk





How are these risks different?

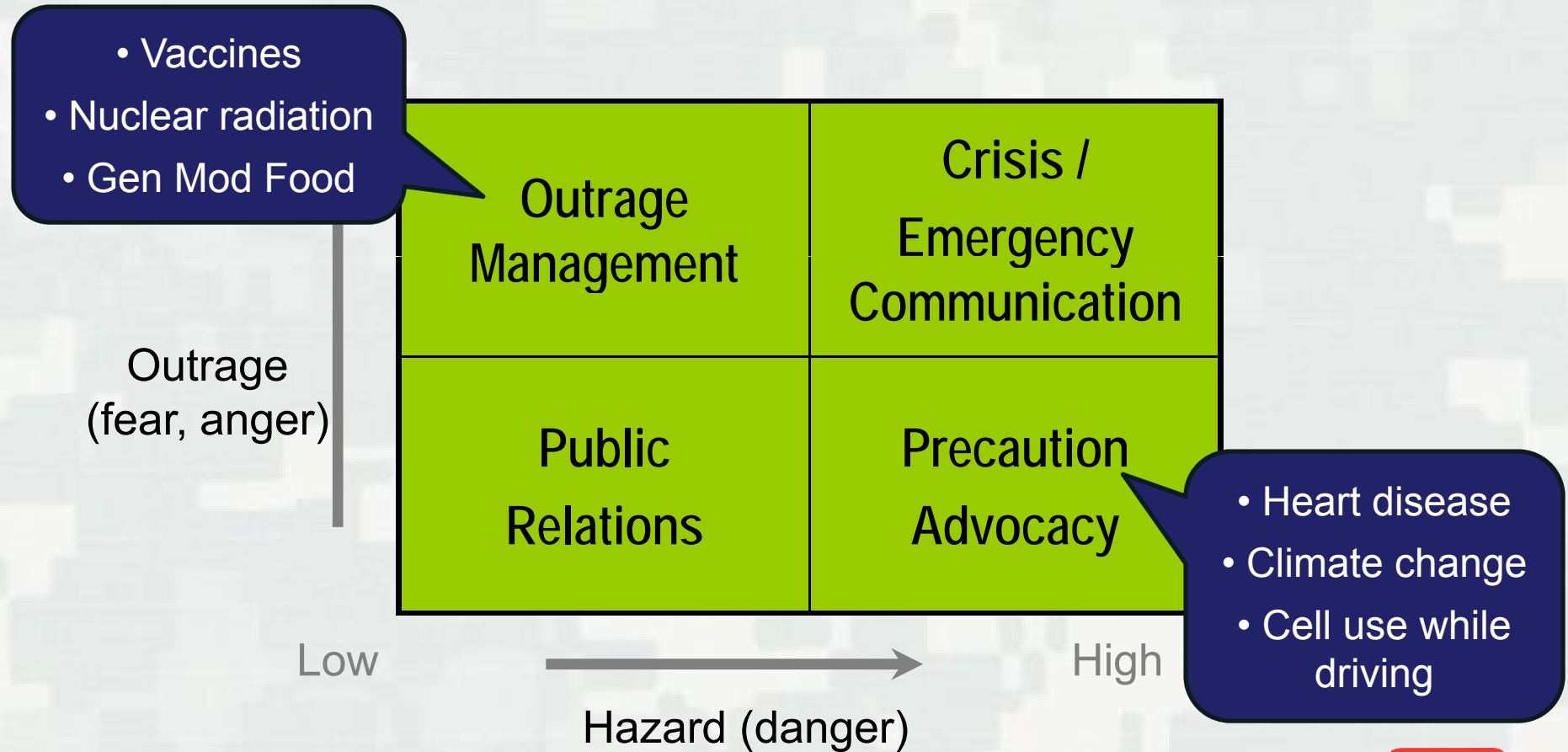


# Which words give you a sense of danger, even to a small degree?

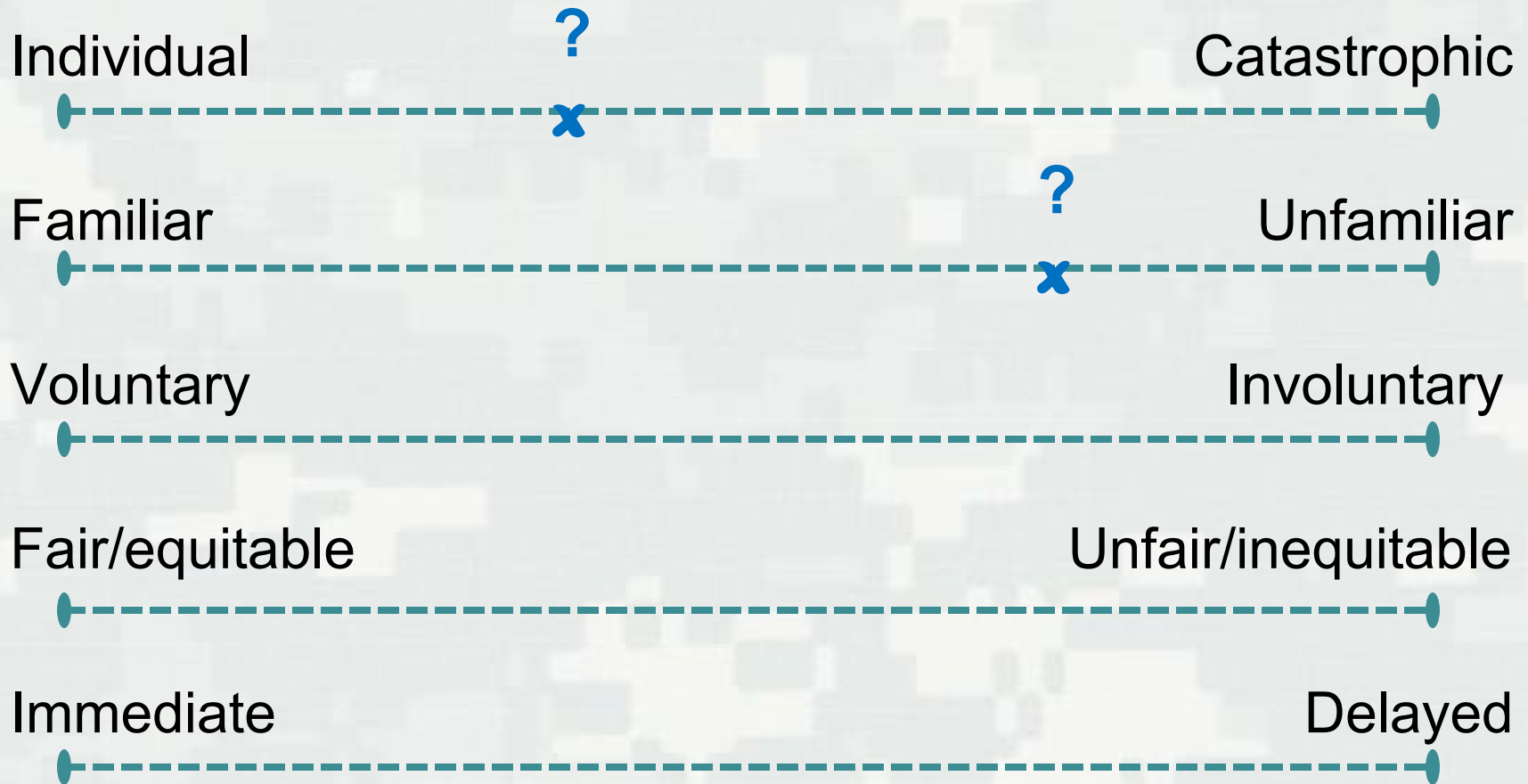
- Airplanes
- Chemicals
- Ice
- Guns
- Hospitals
- Dogs
- Alcohol
- Pretzels



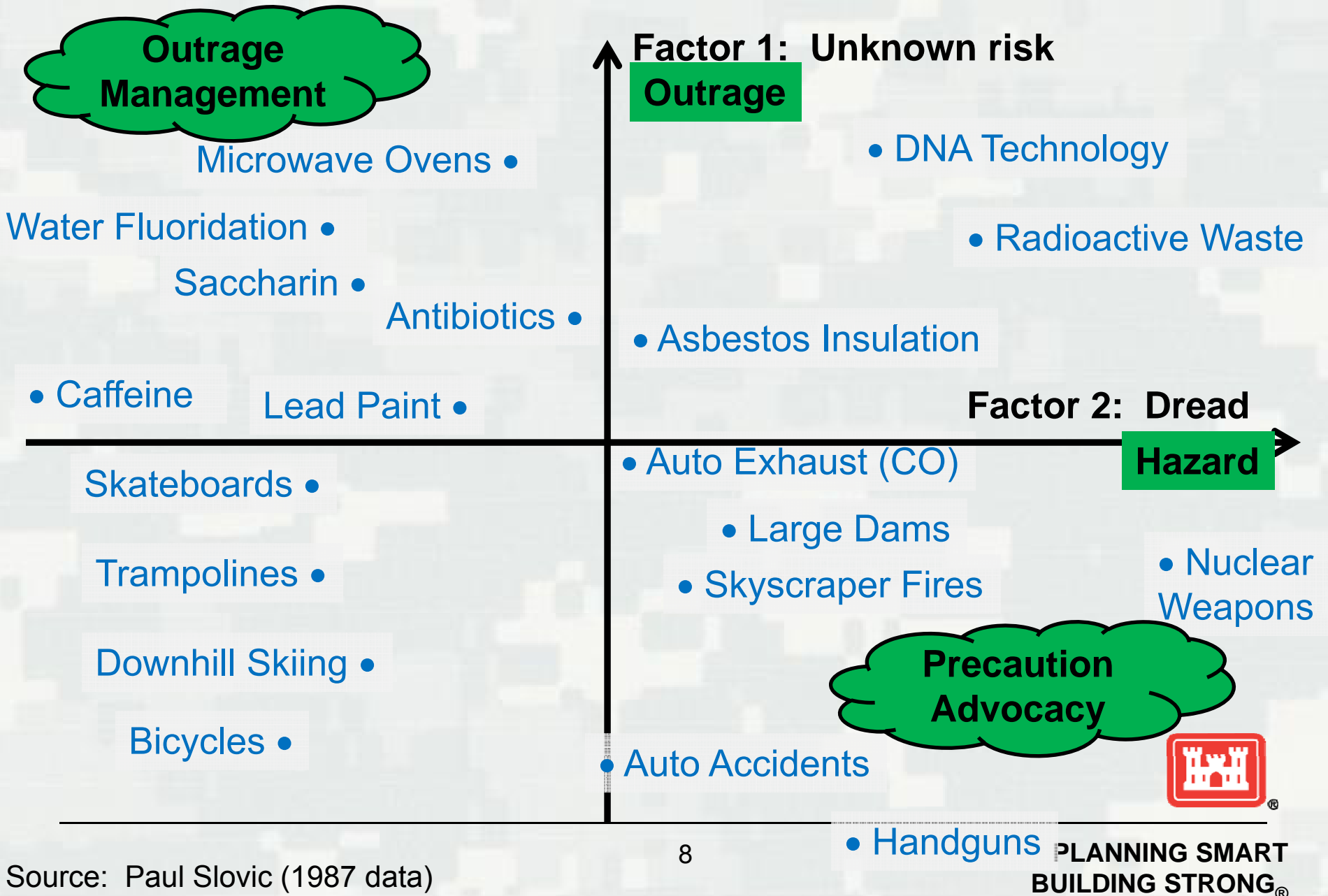
# Examples of Different Risk Communication Contexts



# (A Few) Risk Perception Factors



# Model of Risk Perception





# Factors Explained

## Factor 1: (Un)known Risk

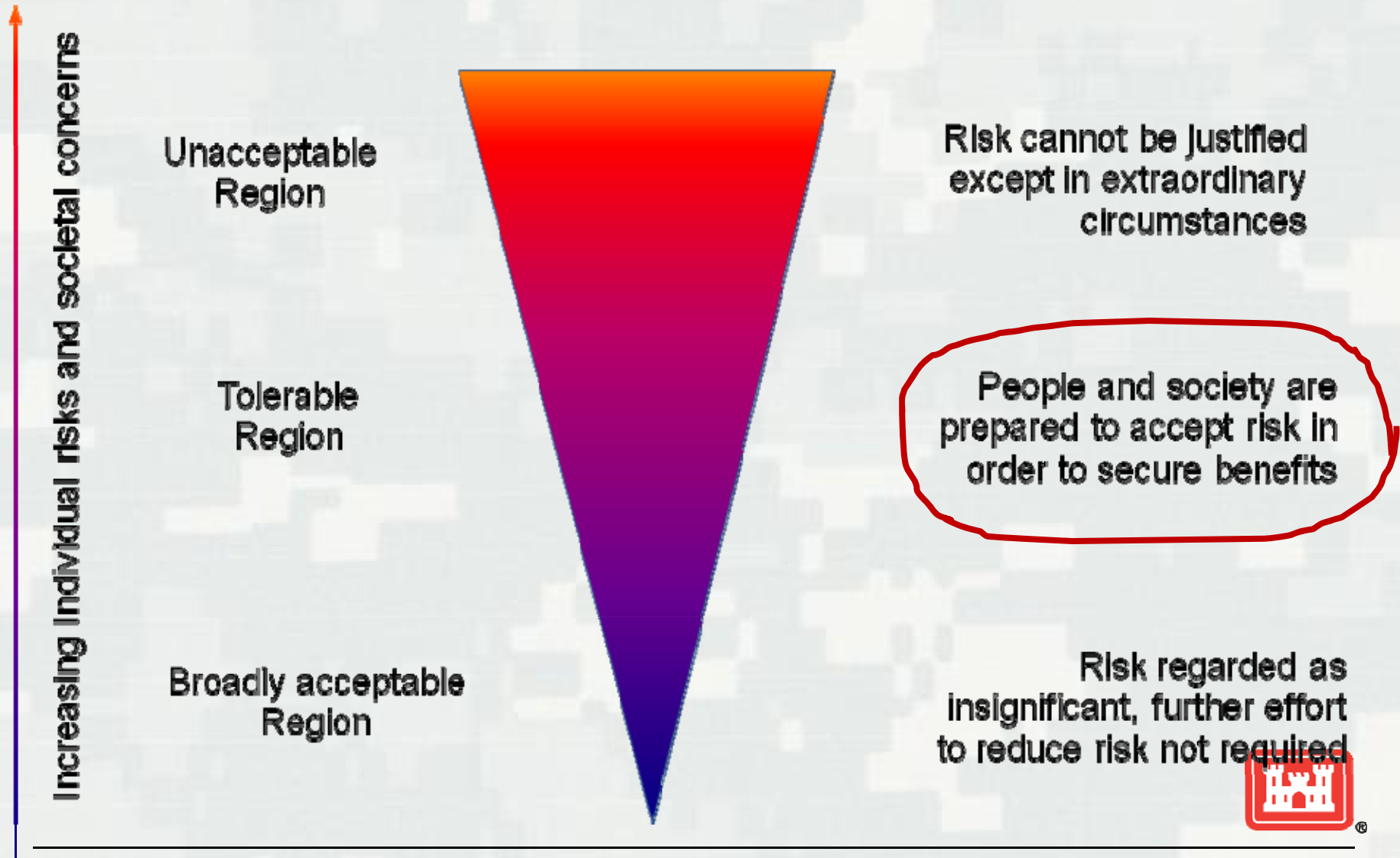
- Observable or not
- Known to those exposed or not
- Effect immediate or delayed
- Old or new risk
- Risks known to science or not

## Factor 2: Dread Risk

- Controllable or not
- (Not) dreaded
- (Not) global catastrophic
- (Not) fatal
- Equitable or not
- Individual or catastrophic
- Low or high risk to future generations
- Easily reduced or not
- Risk decreasing or increasing
- Voluntary or involuntary



# Tolerable Risk



# Additional Factors that Affect Outrage & Acceptability

- Degree of Risk Aversion
- Trust in institutions
- Media attention
- Accident history
- Benefits
- Origin
- Emotions; Denial



# WHAT HAS YOUR EXPERIENCE BEEN IN FLOOD RISK MANAGEMENT?



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# Applying the principles

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Opening the floodway?

Building a new levee?

Channel deepening?

A drowning at a Corps lake?

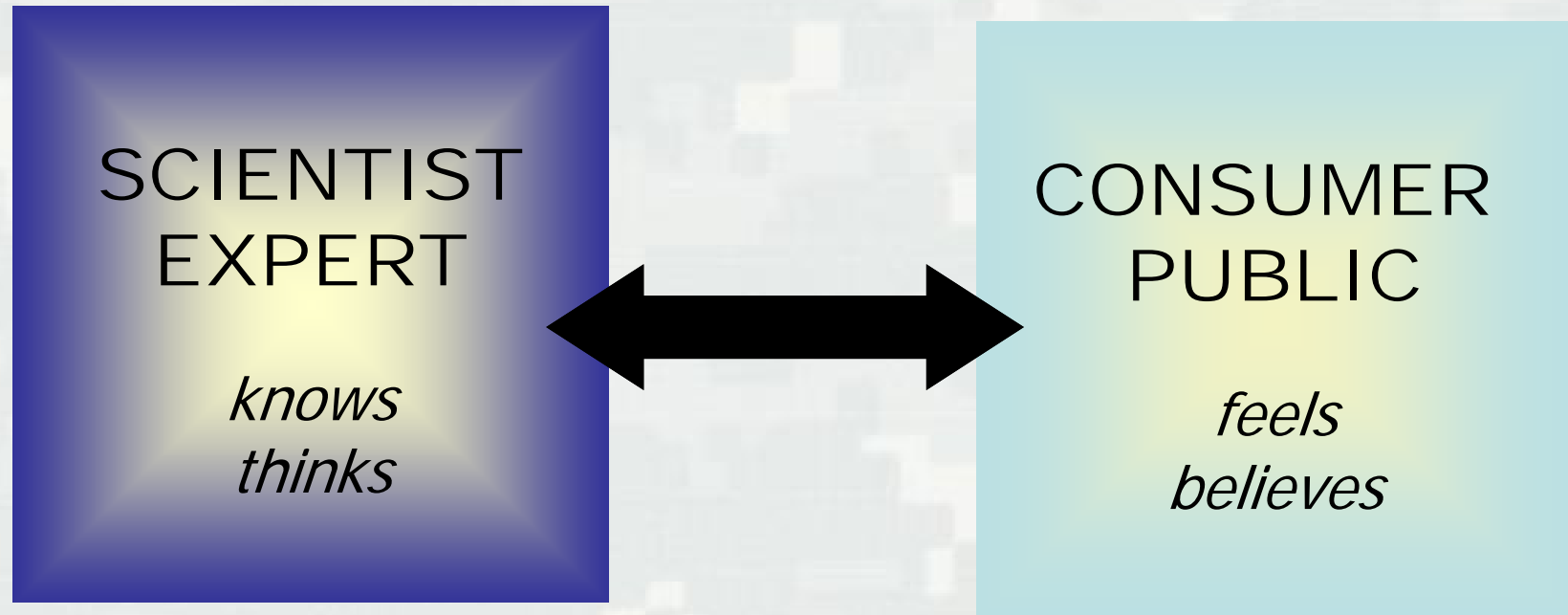
Improving fish habitat on a waterway?

Asian carp in Lake Michigan?

Which factors do or don't come into play?



# Scientist - Consumer Disconnect



Fact-based:  
*hazard, probability*

Value-based:  
*consequences,  
importance of what  
may be lost*

# Outrage Factors Affecting Acceptability

- Catastrophic potential
- Familiarity
- Understanding
- Controllability
- Voluntary exposure
- Effects on children
- Manifestation of effects
- Victim identity
- Dread
- Trust in institutions
- Media attention
- Accident history
- Equity
- Benefits
- Reversibility
- Origin



# Risk is Inherently Subjective

*Risk does not exist “out there,” independent of our minds and cultures, waiting to be measured. Human beings have invented the concept “risk” to help them understand and cope with the dangers and uncertainties of life.*

*- Paul Slovic, 1992*

Risk Communication must recognize that different groups & individuals will have **different, subjective concepts of Risk**



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# Risk Perception and Attitudes Related to Flood Risk Mgt

- Risk Attitudes:
  - ▶ Degree of risk aversion
  - ▶ Voluntary or not
  - ▶ Catastrophe potential
  
- Perception of Flood Risk
  - ▶ Probability of a loss
  - ▶ Magnitude of potential adverse consequences

