Katrina is the Latest Mega-Example of A Growing Trend

FIGURE 3.1 Average annual losses per 1 million people from natural hazards in the United States, 1975-1994 (in 1994 dollars).
Result of the confluence of geophysical inevitability
earthquakes, hurricanes, floods, forest fires
demographics
migration to cities in harms way
increasing economic inequality
constructed environment
densifying, complexing
becoming more artificial

Storm Surge + Wind raise water levels
Rain saturates levee berms and foundation soils
Surge enters and is funneled into canals
Berm-flood walls fail
New Approach to Hazards

Adopt systems approach:
\texttt{geophysics:demographics:infrastructure}

Accept responsibility
- humans - not nature - cause disaster losses

Anticipate ambiguity and change
- yesterday's mitigation may not reduce future losses

Reject short-term thinking
- how will today's mitigation protect future generations

Account for social forces
- mitigation must be a shared social value & responsibility

Redevelop SUSTAINABLY
- mitigation should strengthen resiliency

\textbf{Disasters by Design}

\textbf{Flood Assessment}

\textbf{Jeff Parish Dry and Orleans Flooded WHY??}

\textbf{WHY??}

\texttt{The New York Times; satellite photograph from DigitalGlobe via Keyhole}
Main Levee-FW
Canal Levee-FW
Drainage Canals
Pumps

System Elements

Jeff Canals Dead End at Large Levee Structure
Orleans Canals
Open Directly to Lake P

17th Street Canal

Jeff's berms are wider than Orleans

Levee Breaks: 17th Street Canal

Broken Levee (~475 feet)
Flooded Residential Area

Before Hurricane Katrina

After Hurricane Katrina