

# The Need for Structural Engineering Licensure

# Needed for What?

- To protect the public health, safety, and welfare
- To improve structural engineering practice
- To establish structural engineering as a recognized profession

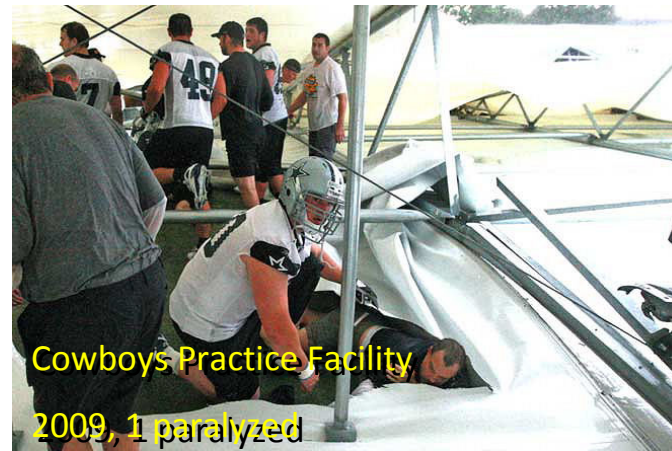
# [1] Protecting the Public from ...

- “Fools and rascals building unsafe structures”? **NO!**
- Engineers designing unsafe, unserviceable, or inefficient structures on a part-time basis? **YES!**
- Incompetent, unqualified, inexperienced, or out-of-date engineers designing unsafe, unserviceable, or inefficient structures? **YES!**

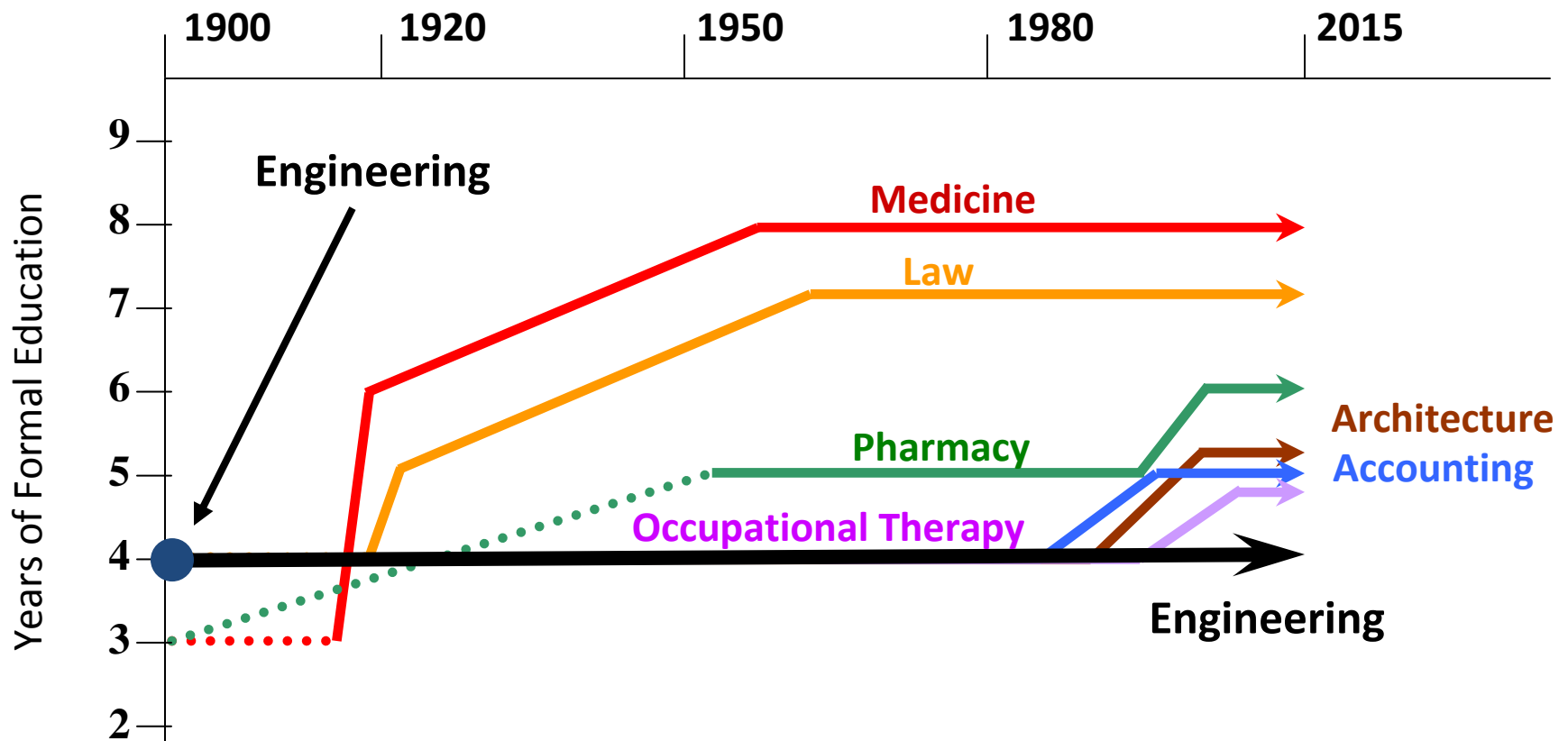
# Competency

- Generic PE licensure allows any engineer to design any structure if he or she feels that they are competent to do so. Competency is only challenged after a failure or complaint.
- Like most humans, engineers tend to overestimate their capabilities, a phenomenon known as the Dunning-Kruger effect.
- The results can be disastrous when this experimentation extends to structural engineering.

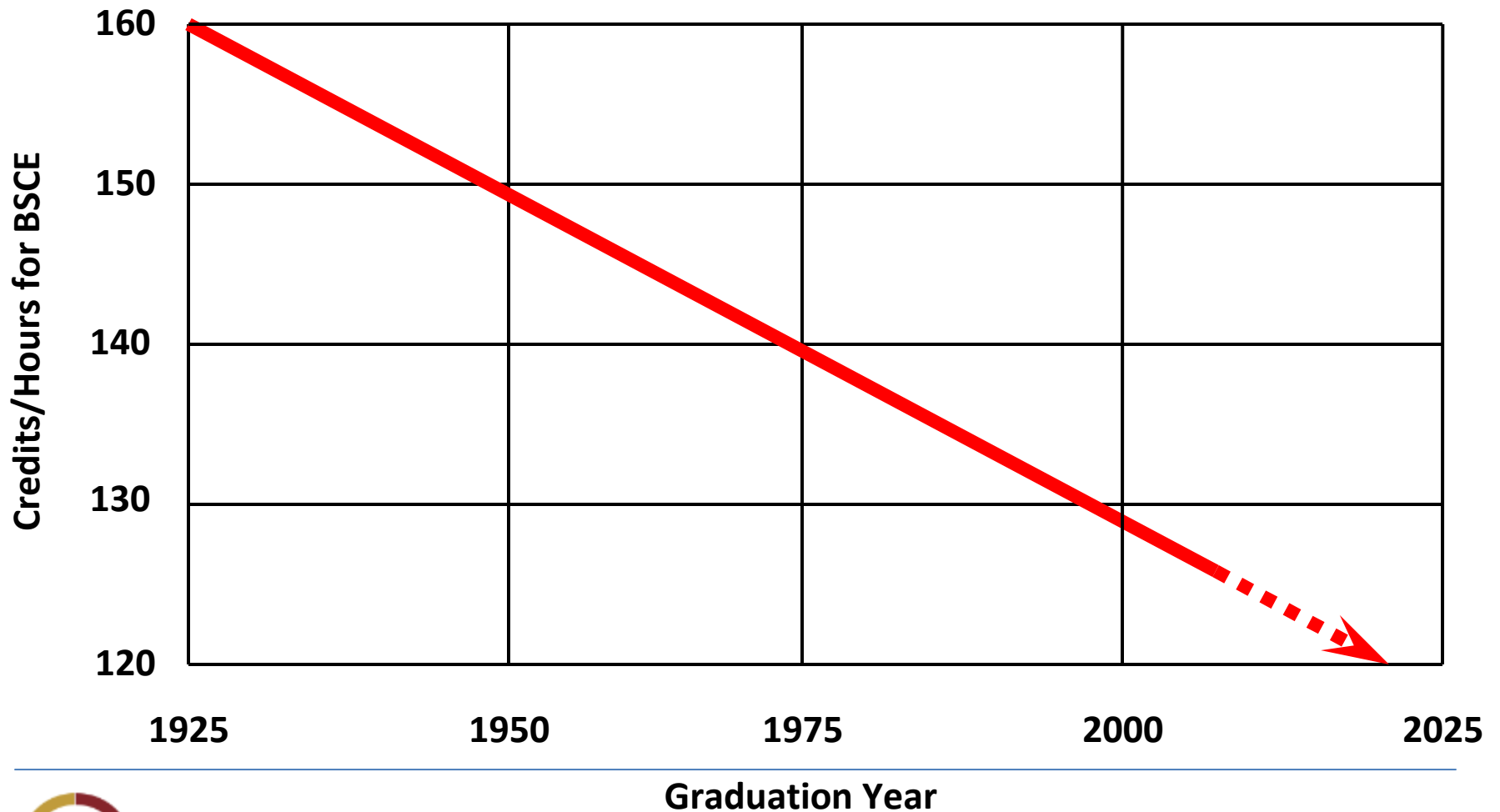
# Disasters Due to Engineering



# Competency by Education



# Competency of the BSCE Degree



# Competency by Examination

- Architectural Engineering PE Exam
  - 8 hours / 100% multiple choice / 25% structural content
  - 72% passing rate in October 2014
- Civil (Structural) Engineering PE Exam
  - 8 hours / 100% multiple choice / 55% structural content
  - 73% passing rate in October 2014
- Structural Engineering SE Exam
  - 16 hours / 50% multiple choice & 50% essay / 100% structural content
  - 43% passing rate in October 2014



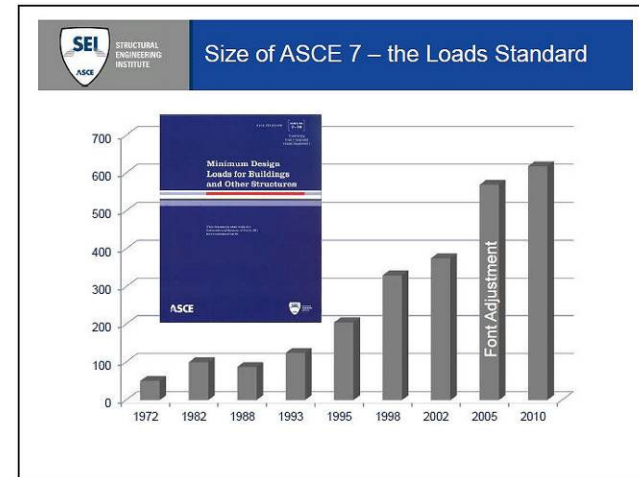
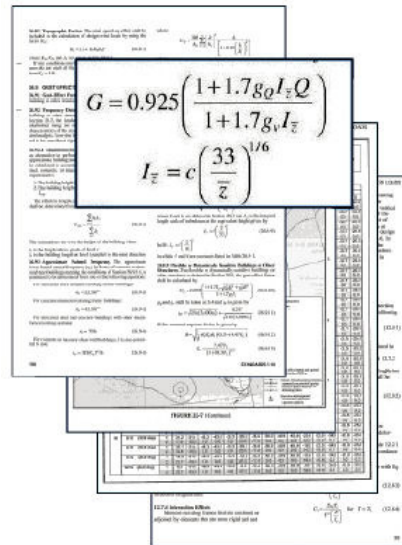
## [2] Improving the Practice ...

- Improve the ability to deal with complexity.
- Enhance the performance of structures subjected to extreme events and loading conditions.
- Support better standardization and reciprocity of structural engineering licensure.

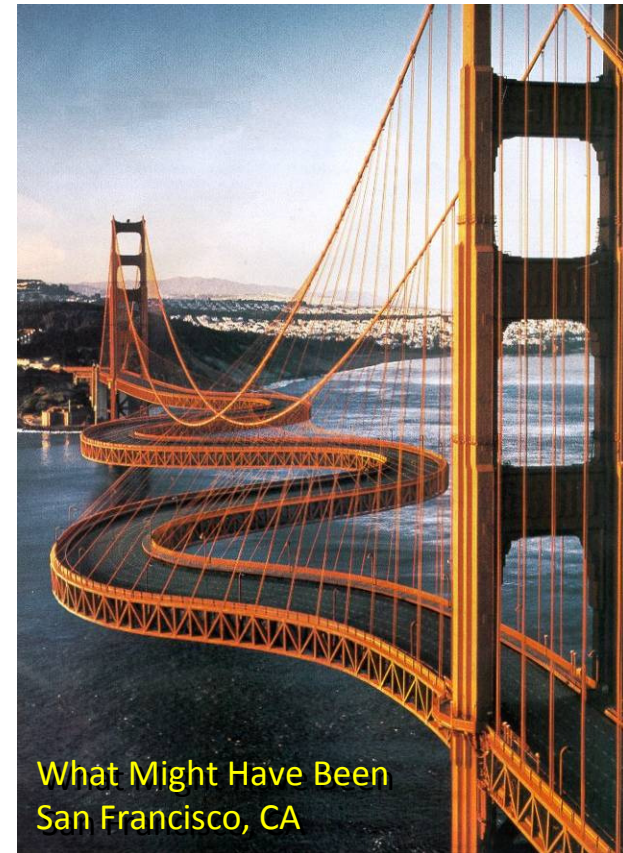
# Complexity is Everywhere

- Codes, specifications, and standards
- Analysis and design techniques, software, and models
- Construction materials, methods, contracts, and delivery
- “Signature” building and bridge structures

# Complexity in Codes

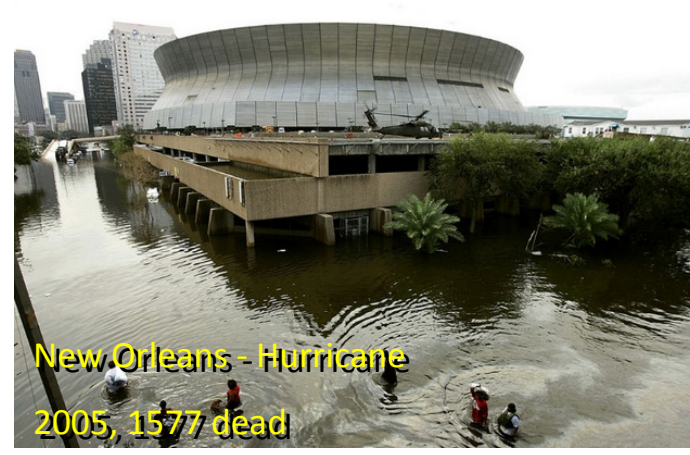


# Complexity in Structures





# Disasters Due to Extremes



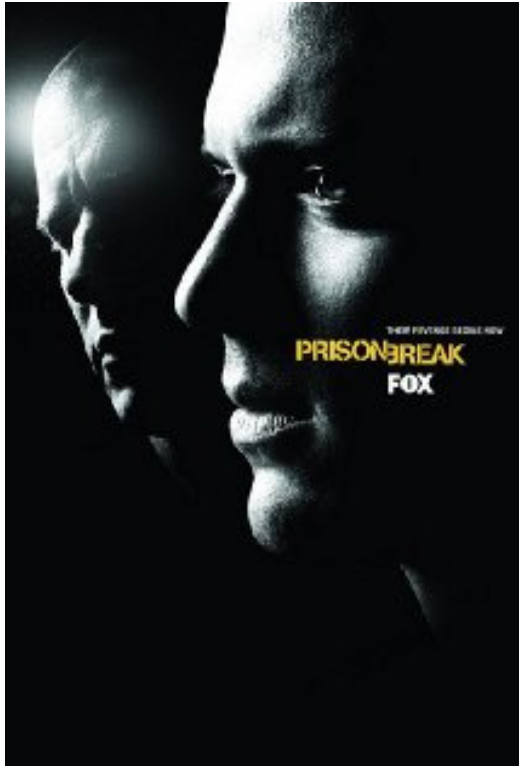
# [3] Establishing Recognition ...



The general public does not know who structural engineers are or what we do. Based on media reports, isn't it obvious that buildings are designed by architects and bridges are designed by civil engineers?

The problem is not that structural engineers suffer from a poor public image, but rather that we have no image.

# Structural Engineers on TV



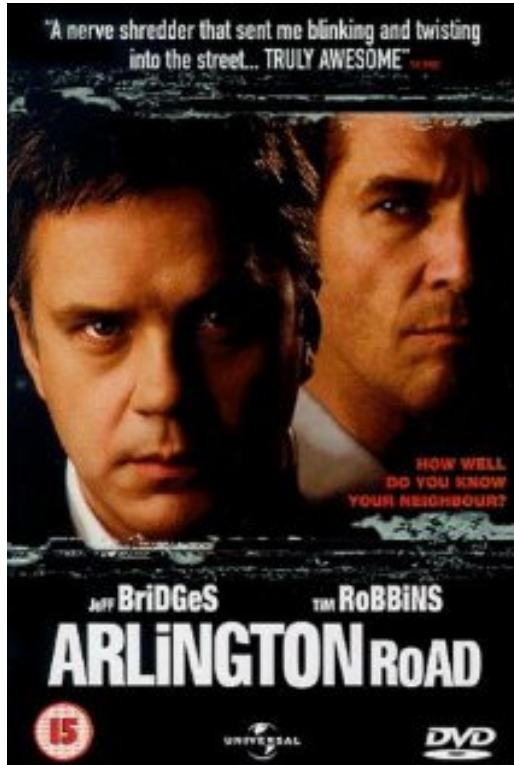
2005 – 2009: *Prison Break*

Wentworth Miller as:

Michael Scofield

Michael was a **criminal**.

# Structural Engineers in Movies



1999: *Arlington Road*

Tim Robbins as:

Oliver Lang (William Fenimore)

Oliver/William was a **terrorist**.



# Structural Engineering Licensure

- Will protect the public from part-time and unqualified practice
- Will improve structural engineering practice in many ways
- Will help to establish structural engineering recognition

# Questions?

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