

# Assessing Health Risks of Cell Towers

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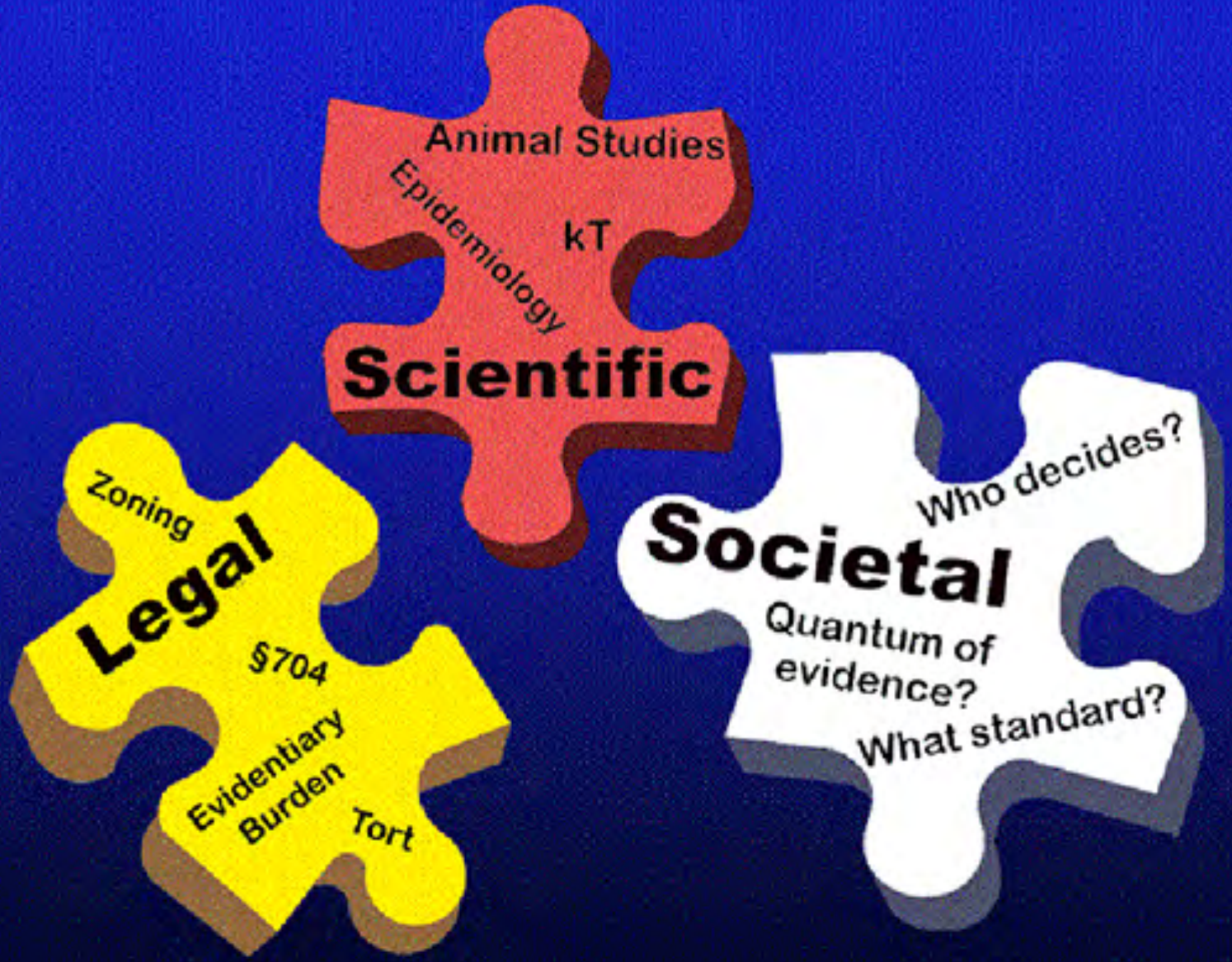
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# Safe? Risk?



# Summary

- Risk?/Safe? Is not purely or even mostly a scientific question
- It is impossible to get an answer from science, and it is unwise to accept any answer from scientists



Animal Studies  
Epidemiology  
kT  
**Scientific**

Zoning  
**Legal**  
\$704  
Evidentiary Burden  
Tort

Who decides?  
**Societal**  
Quantum of evidence?  
What standard?

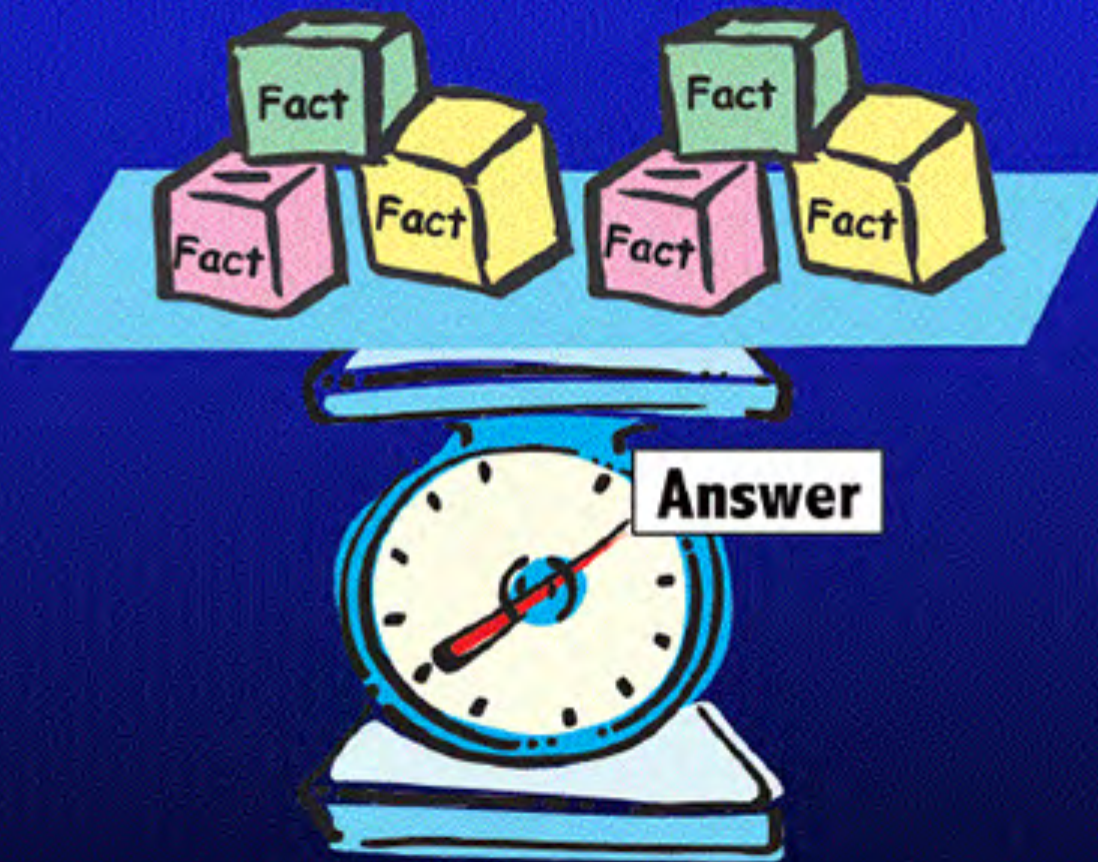
Suppose →



Q1: What would it look like?

Q2: How would we get it?

# Orthodox Answer to Q1



# OK - Then What's a Fact?



Discovery



Measurement



\*Deduction



\*Canonical inferential fact  
in the physics thought-style

# \*Risk?/Safe? = Nonquestion in Physics

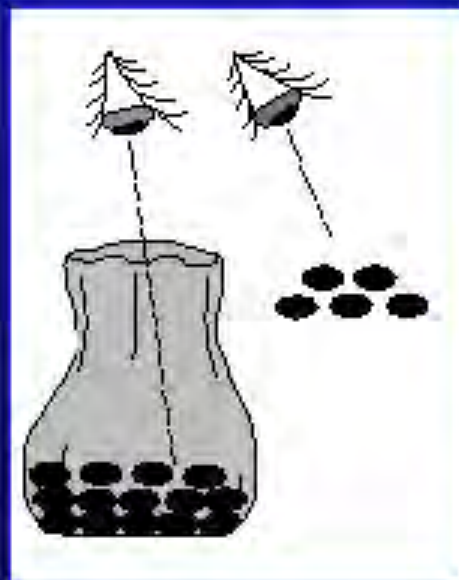


\*Don't confuse this question with the relatively trivial kind of question that can be answered by a measurement



# \* Abduction

(the other kind of inferential fact)



“The evidence suggests that the beans came from the bag.”

\*The canonical reasoning form in biology and medicine

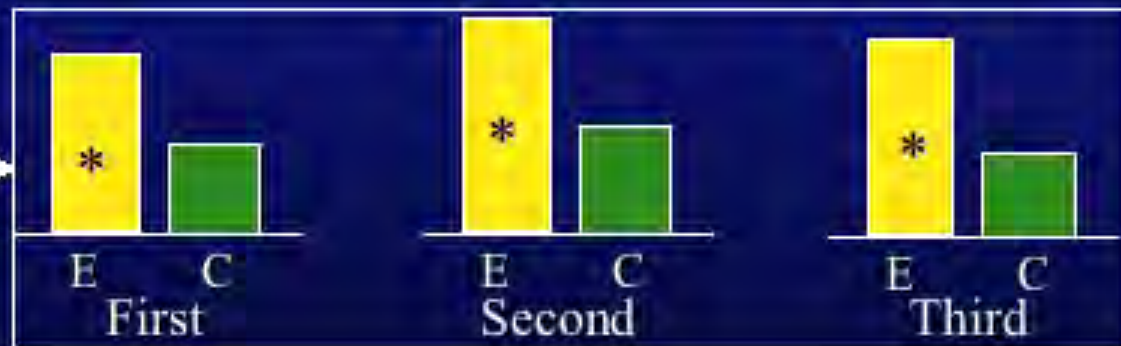
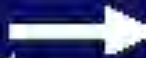
# Subjectivity in Abductive Facts

Effect of EMF on Body Weight in Mice

First Experiment

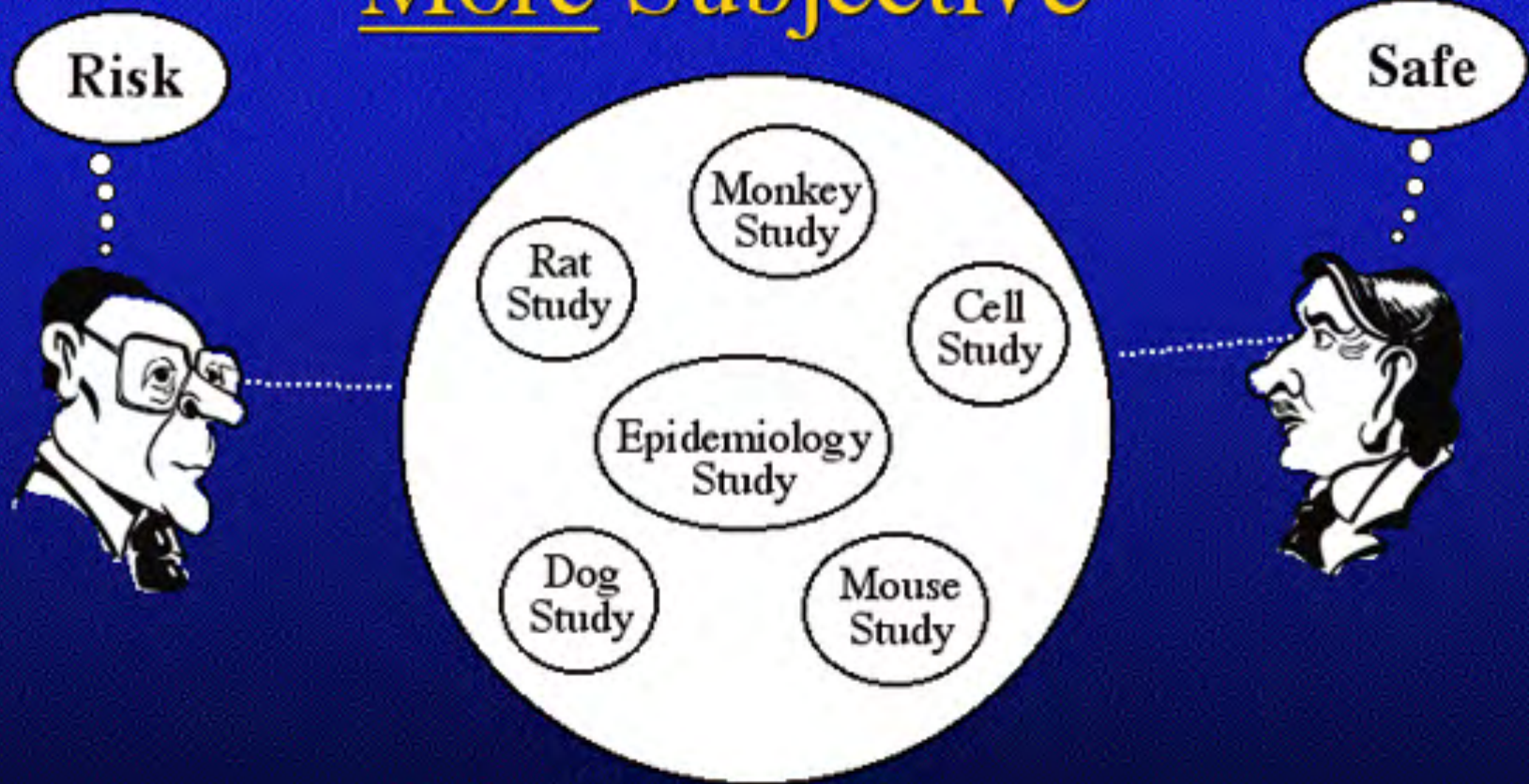


Second Experiment

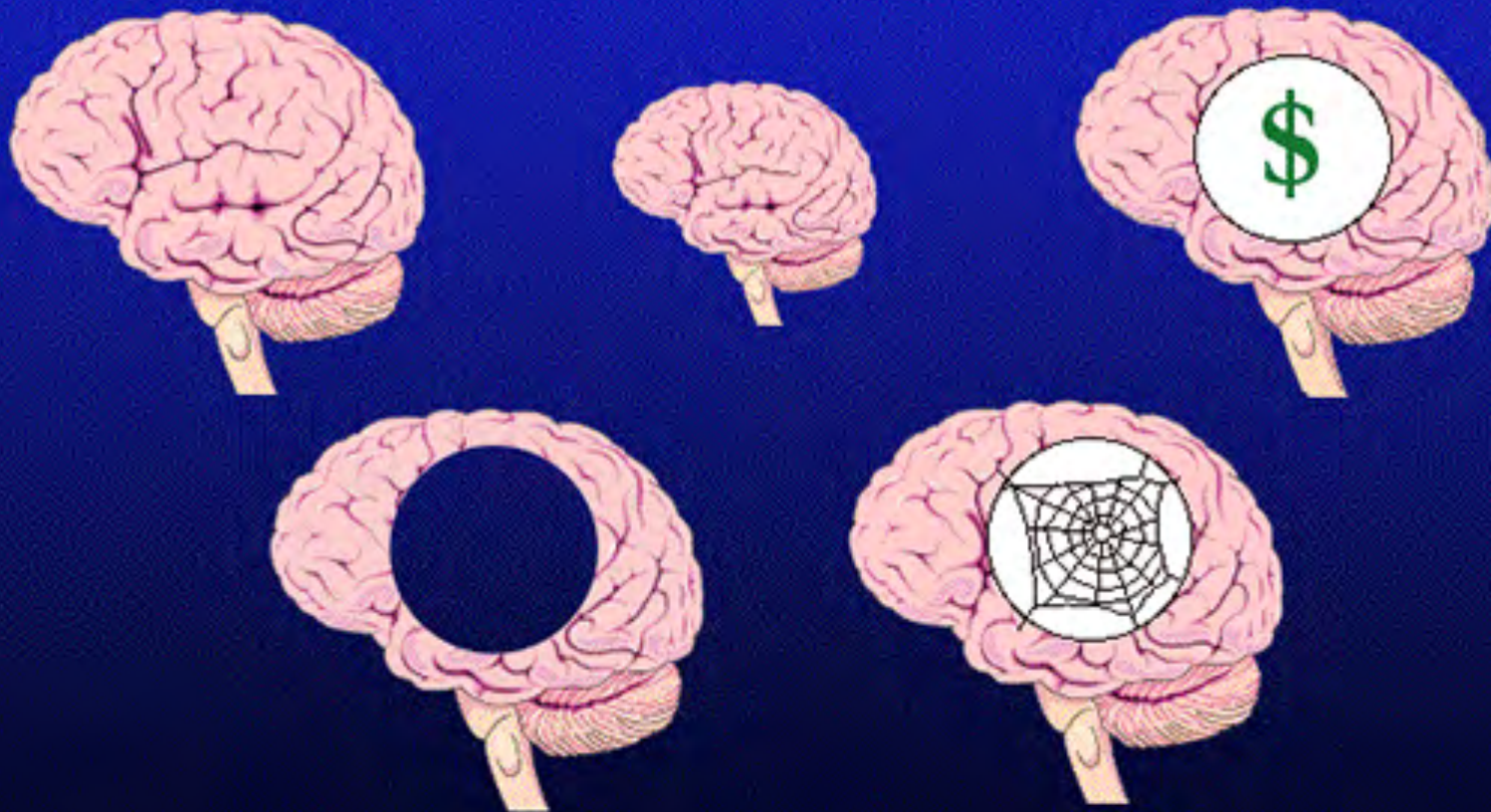


\*P < 0.05

# Abductive Generalizations are More Subjective



# Why Biomedical Facts Are Subjective to the Extent That They Are

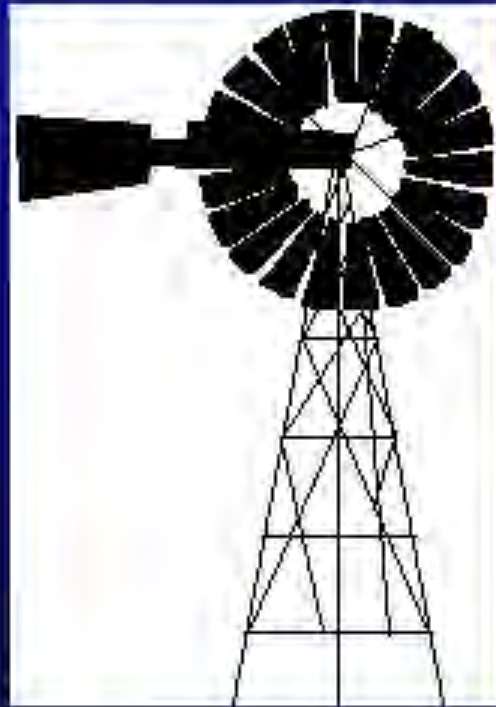


# The Blue-Ribbon Panel Process Doesn't Work



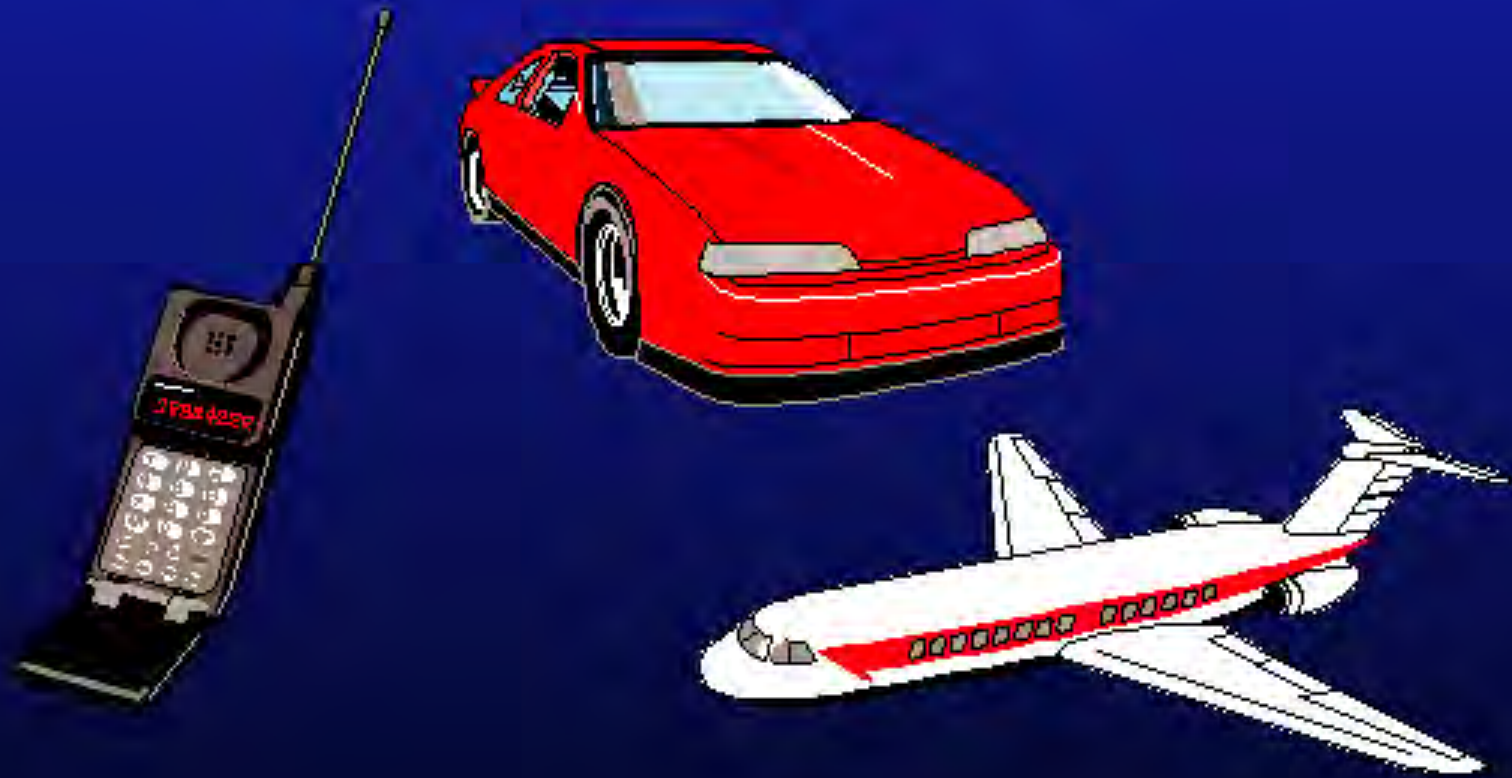
# Man-Made Linear Systems

## Simple Linear Systems



# Man-Made Linear Systems

## Complex Linear Systems



# Man-Made Nonlinear System



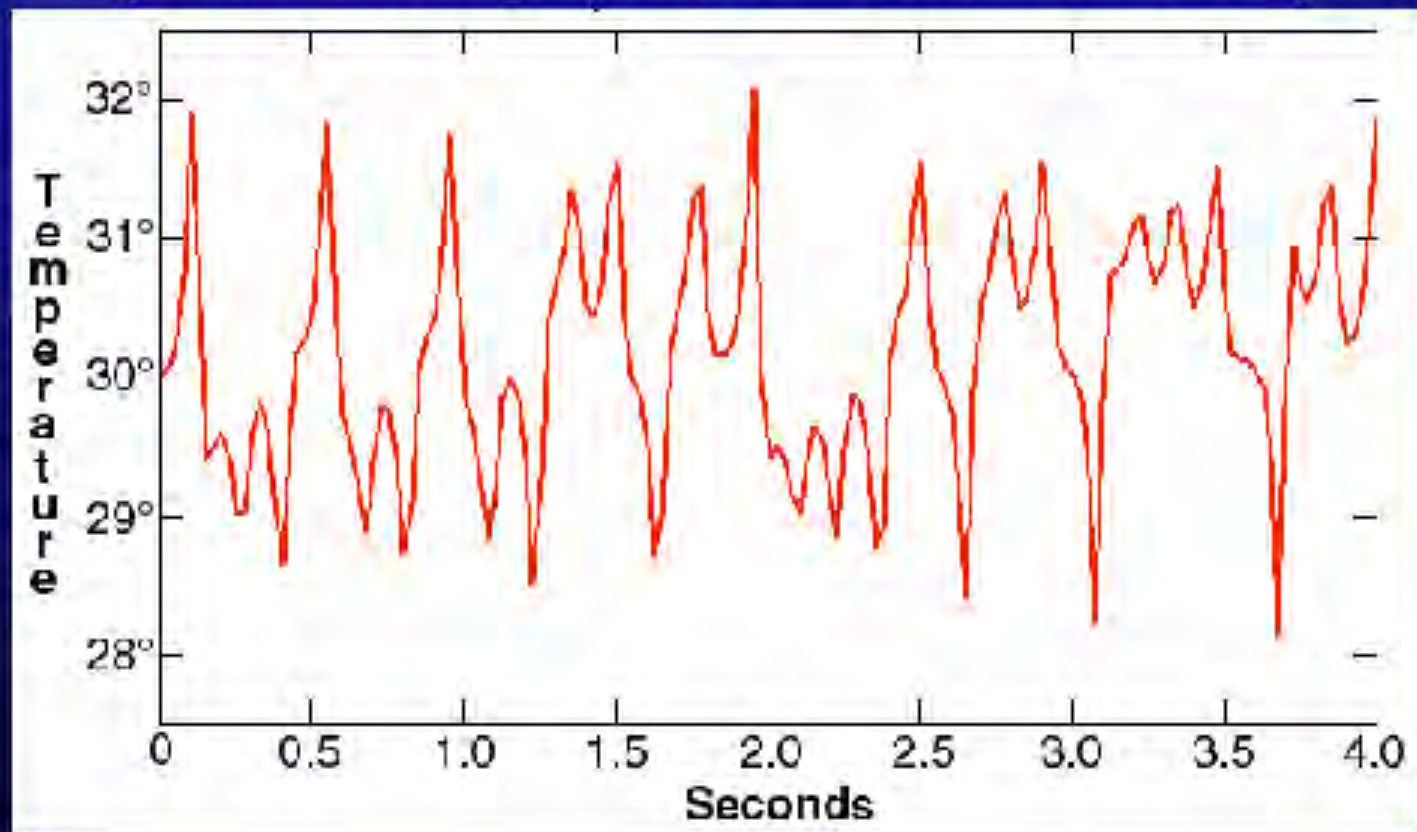


# Natural Nonlinear System



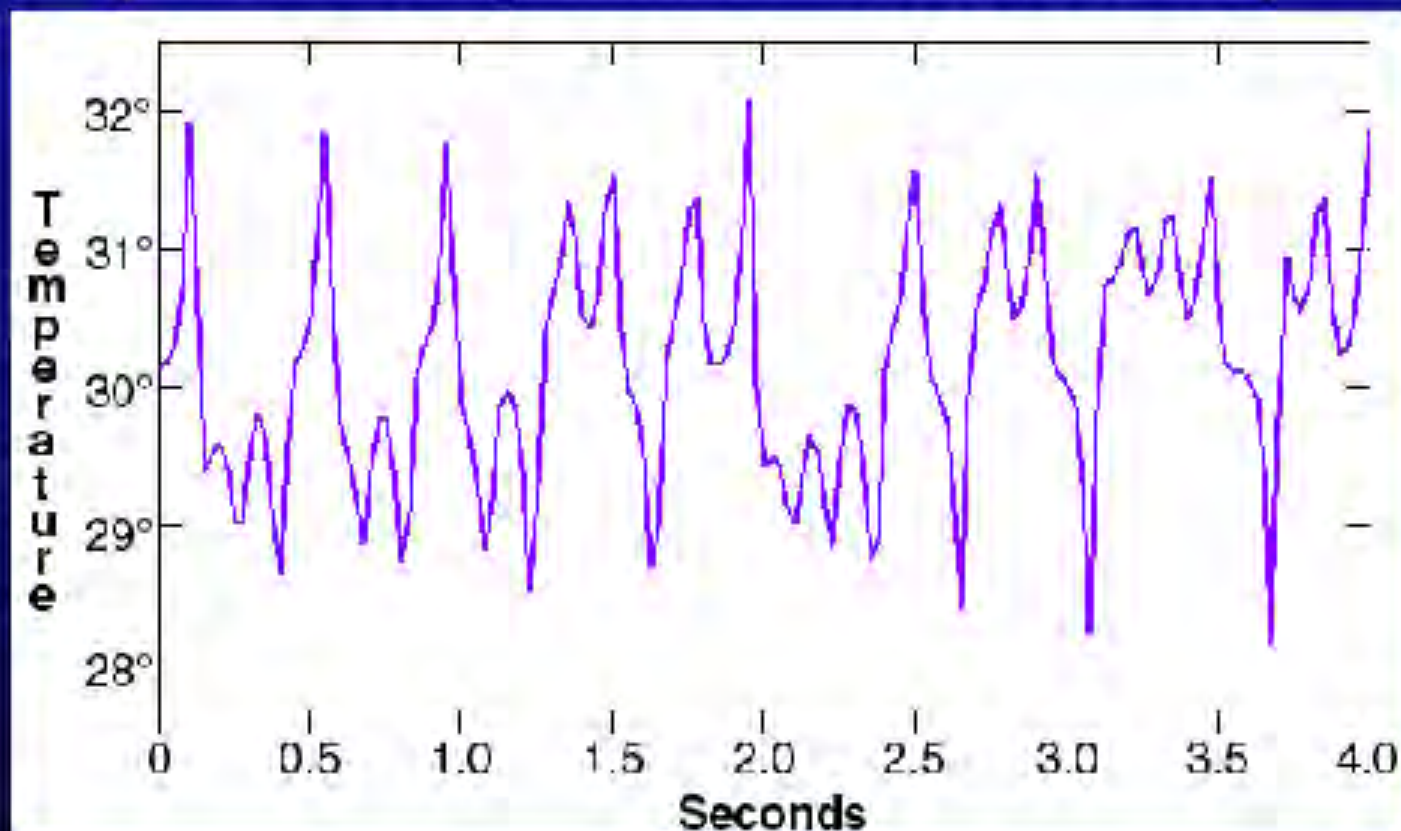
# Sensitivity to Initial Conditions

**Initial Temperature = 30.000000°C**



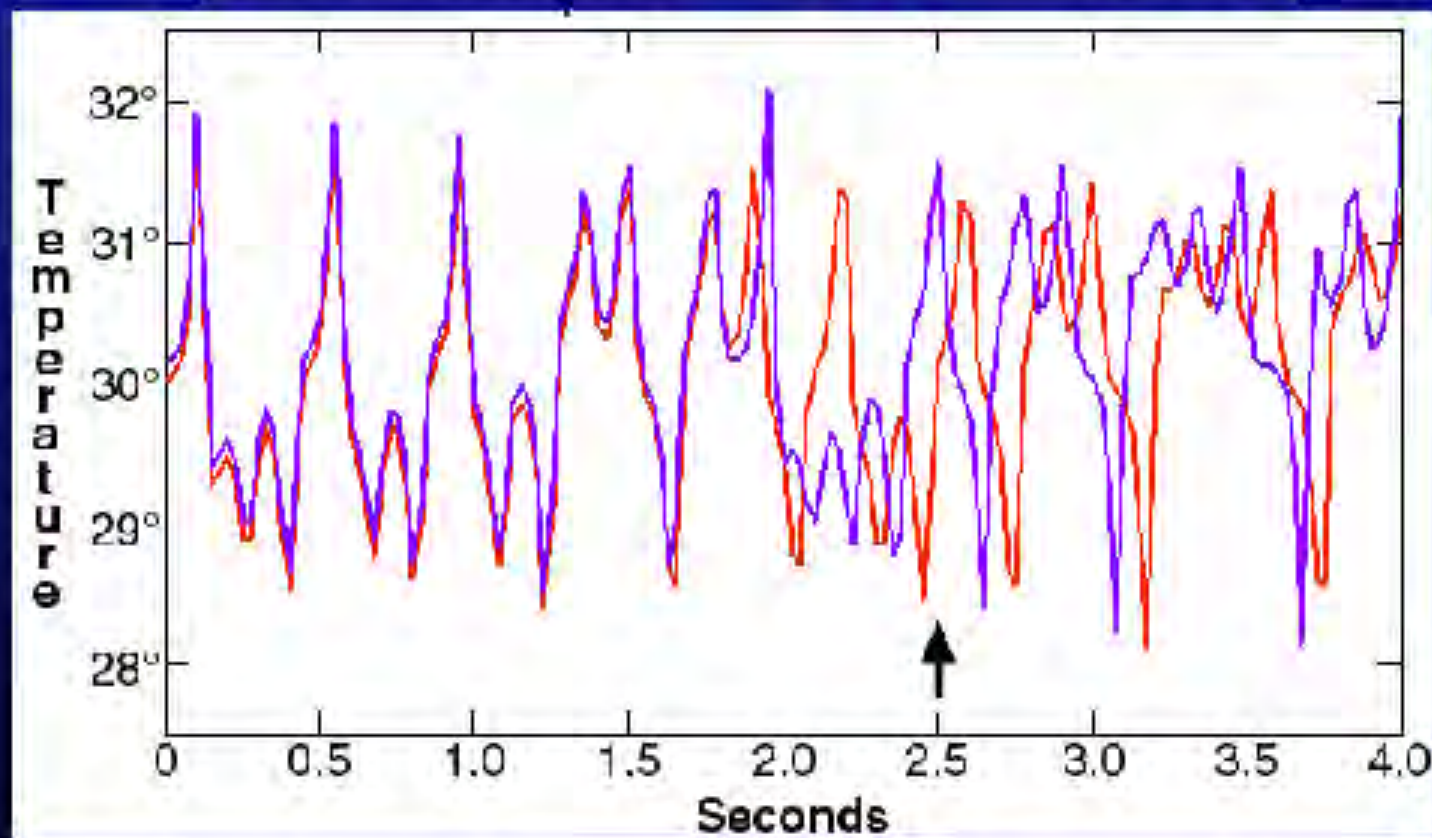
# Sensitivity to Initial Conditions

**Initial Temperature = 30.000001°C**



# Sensitivity to Initial Conditions

At 2.5 seconds: **28.5°C** **31.5°C**

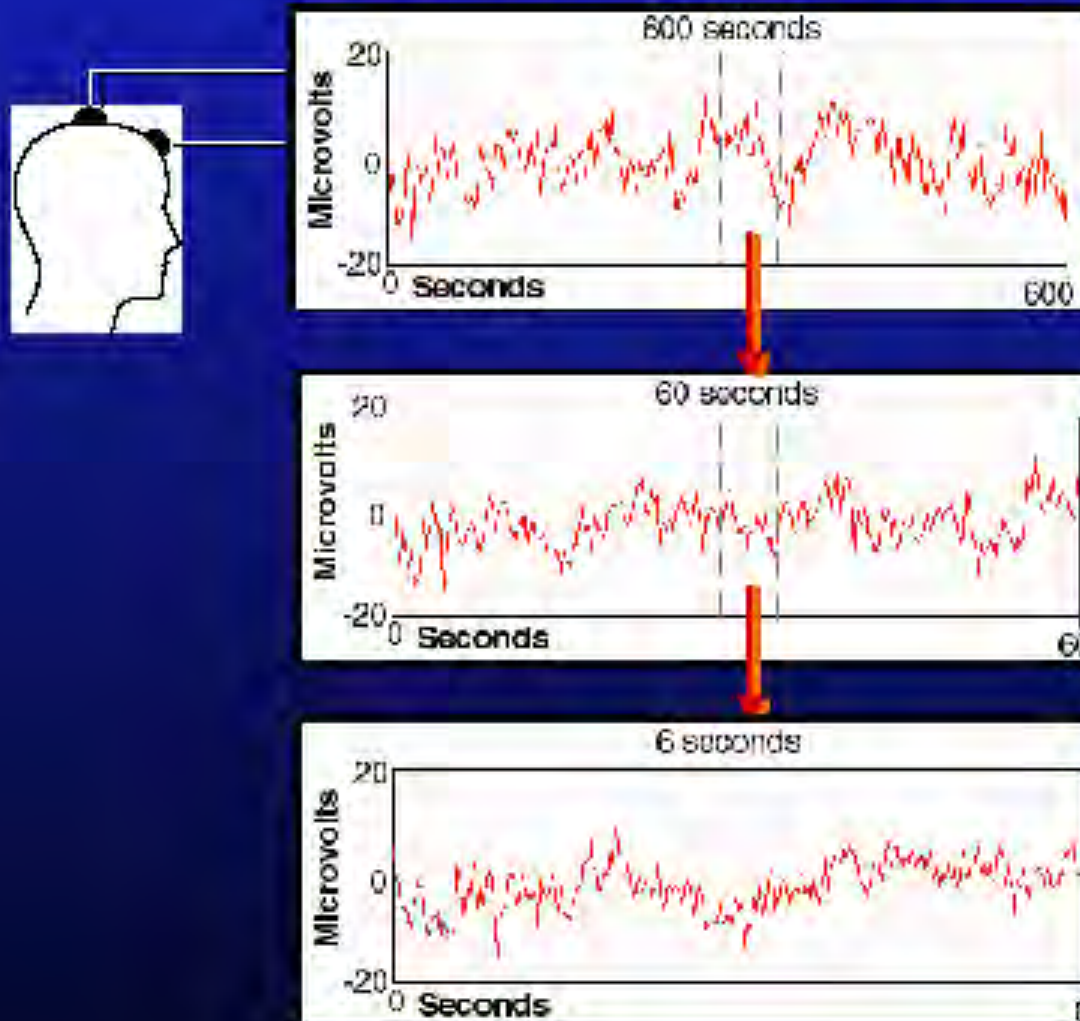


Chaos  
is  
Sensitivity to Initial Conditions



**Butterfly Effect**

# Human EEG

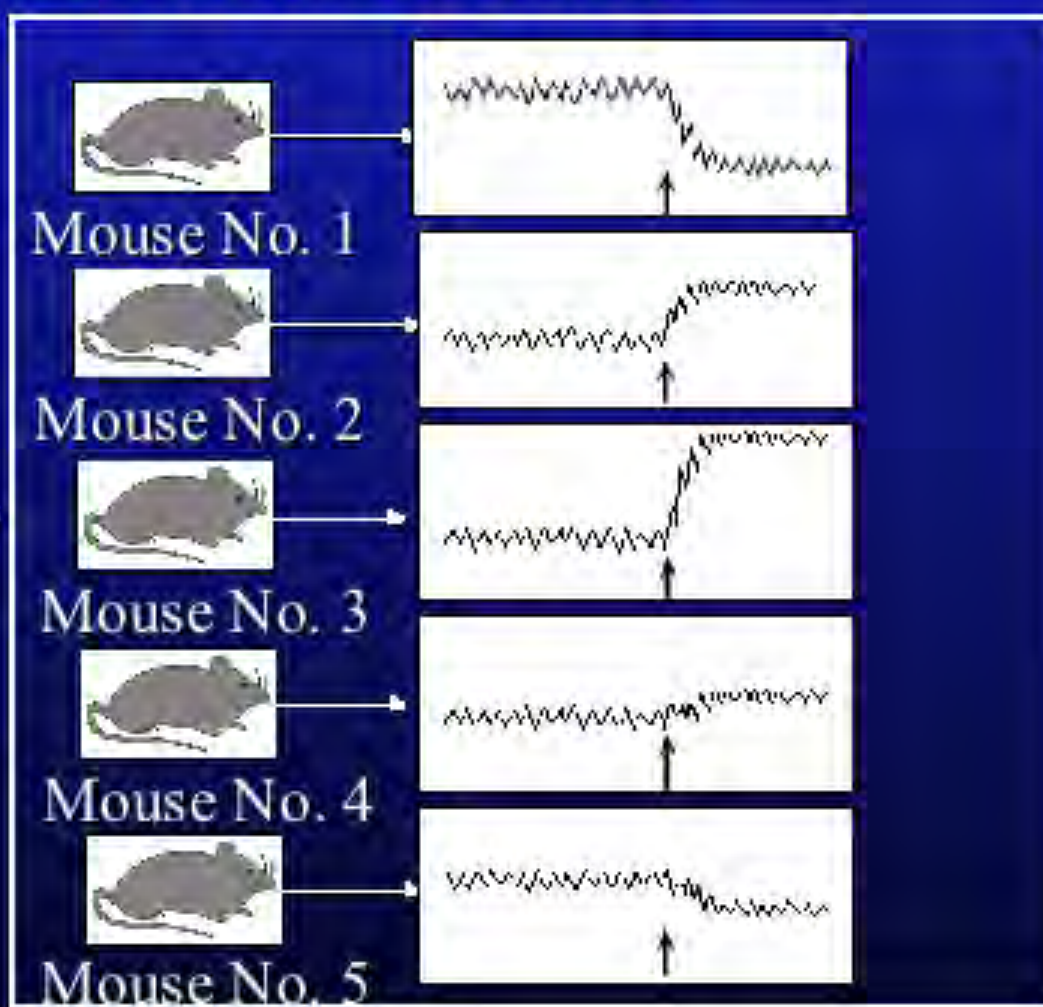


$D \approx 4$

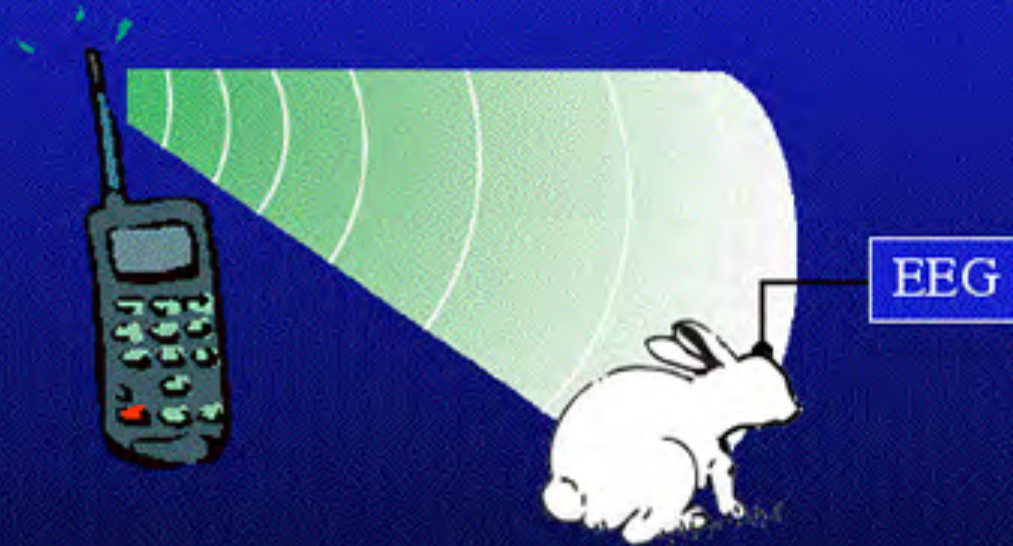
# Nonlinear Model



Hypothetical  
Data



# Cell Phones Cause Nonlinear Change in EEG



EEG Percent Determinism





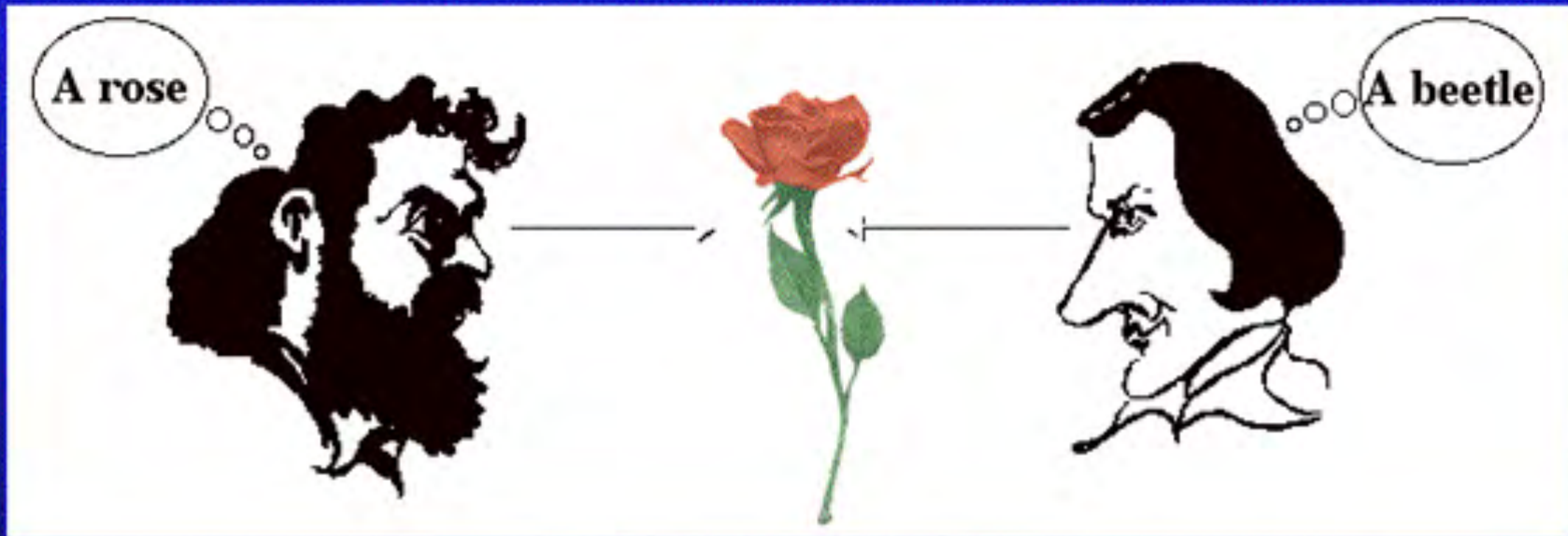
# Legal Aspects of Risk?/Safe?

**SAFE**



- Burden is on companies, not the zoning board, despite §704

# Terminology



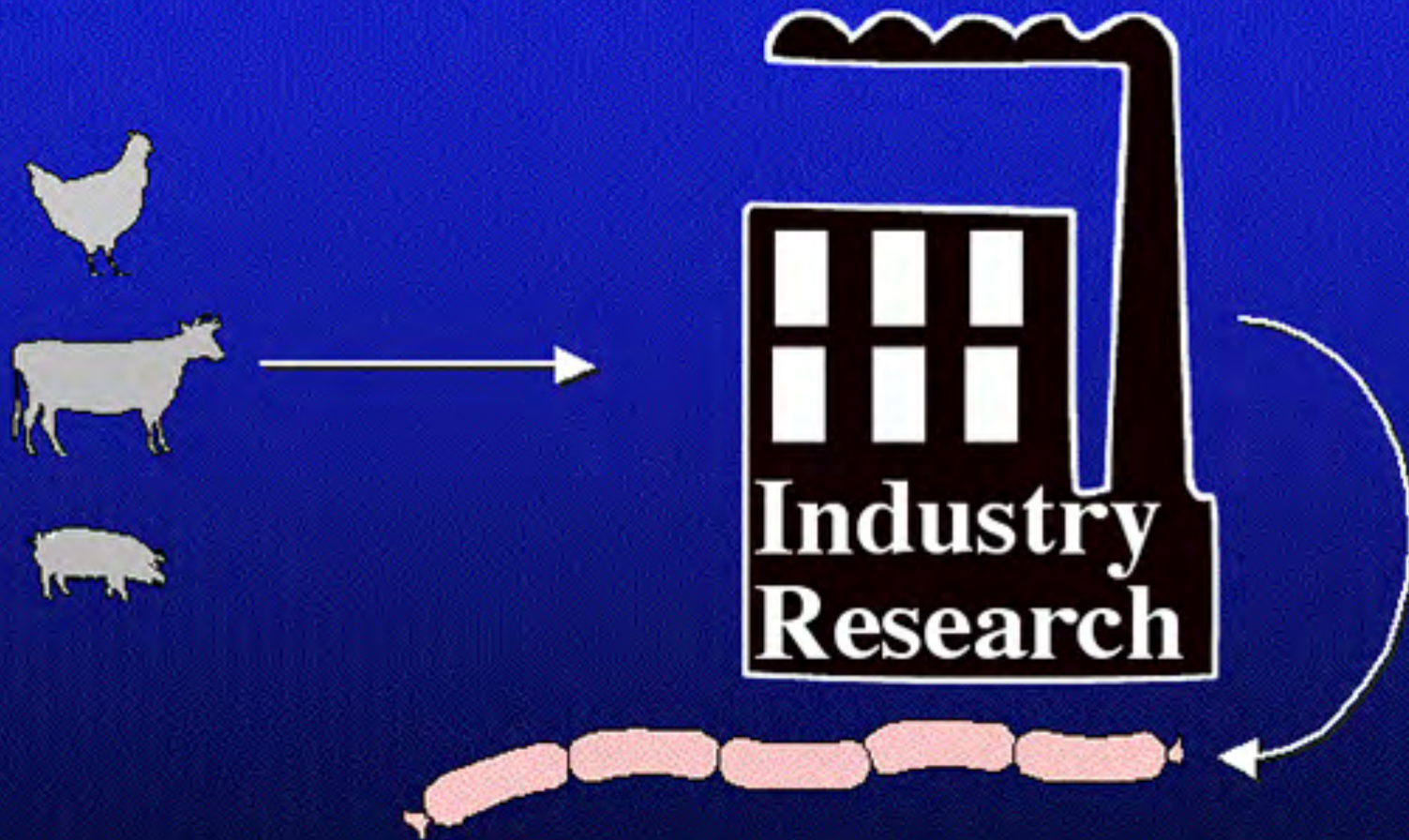
“clear”  
“persuasive”

“convincing”  
“definite”

“certain”  
“inconsistent”

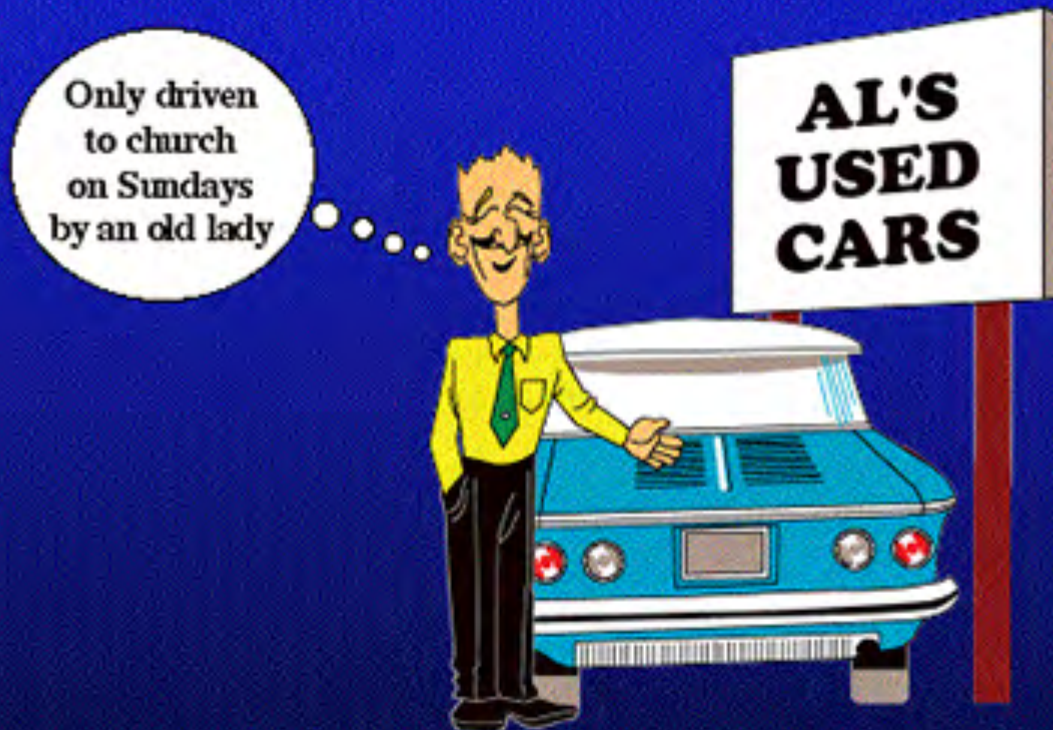
- It is essential to understand what particular words mean

# All Industry Research is Dubious



- Unless you know what goes on inside the factory, you can't trust the product

# Scientists Are Only People



- All industry spokesmen (especially M.D.'s and Ph.D.'s) should be regarded as compensated endorsers

# Examination of Witness



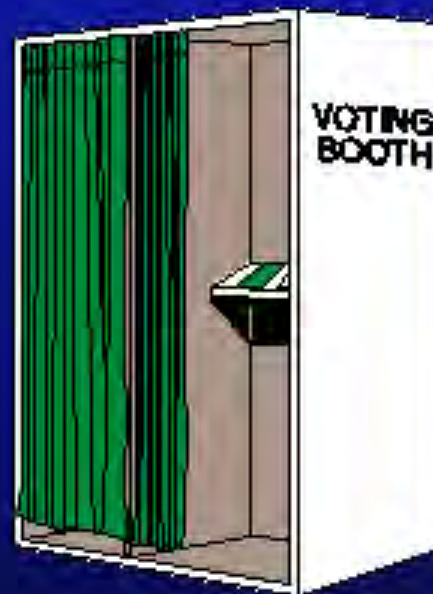
- Effective cross-examination is as rare as it is important



Decide beforehand what acceptable evidence IS.

# Risk?/Safe?

## A Basic Societal Issue



- Should you or the government decide?