

## Judgment and Decision Making - Inductive Reasoning

### Probabilistic Judgment

"gold standard" Bayes's Theorem:

$$\text{Prob}(H|E) = \frac{\text{Prob}(E|H)*\text{Prob}(H)}{\text{Prob}(E|H)*\text{Prob}(H) + \text{Prob}(E|\sim H)*\text{Prob}(\sim H)}$$

H     $\sim$ H

E        A    B

$\sim$ E        C    D

$$\text{Prob}(E) = A + B$$

$$\text{Prob}(H|E) = A/A+B$$

so what are A, B, (and C, D) ?

does  $A = \text{Prob}(E)*\text{Prob}(H)$  ?? what would that assume?

$$A = \text{Prob}(H)*\text{Prob}(E|H) = \text{Prob}(E|H)*\text{Prob}(H) \quad \text{why not } \text{Prob}(E)*\text{Prob}(H|E) ?$$

$$B = \text{Prob}(\sim H)*\text{Prob}(E|\sim H) = \text{Prob}(E|\sim H)*\text{Prob}(\sim H)$$

So:

$$\text{Prob}(H|E) = A/A+B$$

$$= \frac{\text{Prob}(E|H)*\text{Prob}(H)}{\text{Prob}(E|H)*\text{Prob}(H) + \text{Prob}(E|\sim H)*\text{Prob}(\sim H)}$$

## Explanations for discrepancies:

### Base Rate Neglect

Kahneman & Traversky 1973  
(30 engineers 70 lawyers)

### Conservatism

(too little attention to evidence)  
Edwards 1968  
choosing chips from bags

### Correspondance to BT with Experience

Gluck & Bower 1988  
patients w 4 symptoms  
\*what is wrong with this\*?

## Heuristics

Tversky & Kahneman, 1974  
Availability  
Representativeness

gambler's fallacy  
vs regression to the mean

Goldstein & Gigerenzer 1999. 2002  
Recognition Heuristic

## Decision Making

subjective utility  
subjective probability  
framing effects