Decision Making

15.301

Managerial Psychology

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Do first, think later

❖ Please take 5 minutes to answer the two questions.

DO NOT DISCUSS WITH NEIGHBORS

14.01

❖ Class is about decision making

❖ We make a lot of decisions
- We have many aspects to our lives
- We have many choices
  - 25,000 products at a Shaw's
 - 50 TV channels
  - Buy/not buy/sell
  - Work/leisure

14.01

❖ What drives people?
  – Want to maximize gains (utility)
  – Want to minimize losses (disutility)
  – Everybody wants that (competition, clients, vendors, peers)

❖ Rationality (Bernoulli, vNM)
 – Ordering of alternatives, dominance, cancellation, transitivity, continuity, invariance

That's a lot of assumptions!

❖ Describe a "Homo Economicus"

❖ Do people really exhibit such rational behavior?

❖ They should. After all, we trust them to do so…
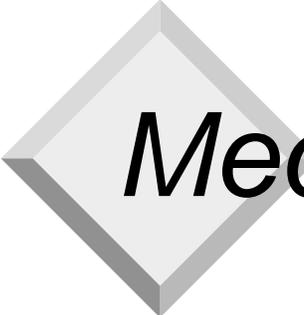
Medical Diagnosis Example

❖ 389 schoolboys screened by a panel of three doctors: 45% judged to need their tonsils removed

❖ 215 who were judged <u>not</u> to need their tonsils removed were examined by a new panel of doctors

❖ What % should be judged to need their tonsils removed?
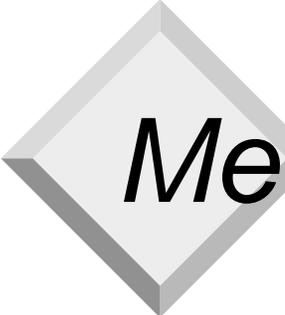
Medical Diagnosis, Continued

- ❖ Results: 46%
- ❖ 116 boys judged twice not to need their tonsils out were judged by a new panel of three doctors
- ❖ Results: 44%
- ❖ Relative vs. absolute judgments
- ❖ Experience is not enough!
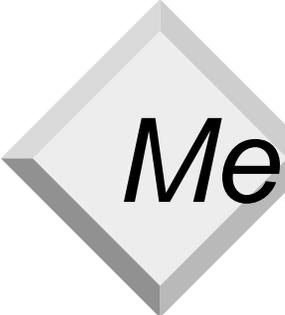
Mental Accounting

❖ Situation A: You have decided to see a play where admission is $50 per ticket, but you have not yet purchased the ticket. As you enter the theater, you discover that you have lost $50 from your wallet. Would you still pay $50 for a ticket (assuming you still have enough cash)?

❖ Situation B: You have decided to see a play and bought a ticket for $50. As you enter the theater, you discover that you have lost the ticket. The seat was not marked and the ticket cannot be recovered. Would you pay $50 for another ticket (assuming you still have enough cash)?
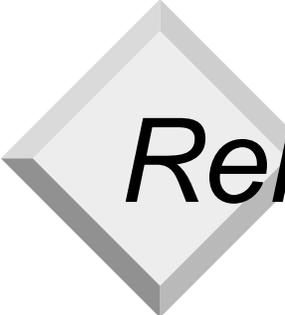
Relative Judgments

❖ Suppose you have just ordered for your company a personal computer at a cost of $2,400. Unexpectedly you learn that the exact same computer is available from another vendor of equal quality at a costs of $2,000. To switch vendors would be costly in terms of man-hours, requiring about one day of a purchasing clerk's time. There would be no other costs such as delay in delivery, loss of goodwill, etc. Would you switch vendors?

❖ Suppose you have just ordered for your company a sophisticated superminicomputer workstation at a cost of $20,400. Unexpectedly you learn that the exact same workstation is available from another vendor of equal quality at a costs of $20,000. To switch vendors would be costly in terms of man-hours, requiring about one day of a purchasing clerk's time. There would be no other costs such as delay in delivery, loss of goodwill, etc. Would you switch vendors?

Assumptions put to the test

❖ People don't behave rationally!

❖ Why?

    – Limited time

    – Limited resources (memory, computational power)

    – They are sub-optimal

❖ Can we predict decisions?

❖ What strategies (tools) do people use for decision making?

❖ Are these tools any good?

Gains and Losses

❖ The United States is preparing for the outbreak of an unusual Asian flu epidemic that is expected to kill 600 people. Two alternative programs are being considered. Which would you favor?

If Alternative A is adopted, 400 people will die.

If Alternative B is adopted, there is a 1/3 chance that no one will die and a 2/3 chance that all 600 will die.

❖ The United States is preparing for the outbreak of an unusual Asian flu epidemic that is expected to kill 600 people. Two alternative programs are being considered. Which would you favor?

If Alternative A is adopted, 200 people will be saved.

If Alternative B is adopted, there is a 1/3 chance that all 600 will be saved and a 2/3 chance that no one will be saved.

Loss Aversion

❖ Losses are more painful than foregone gains, so we are willing to take a chance to avoid an apparent loss

❖ Which is the "right" frame?

❖ Doctors also differ in gain vs. loss frames

❖ As a copier salesman, you can provide customers with a free trial offer of 30 days use. Should you offer the base machine or the fanciest? Why?
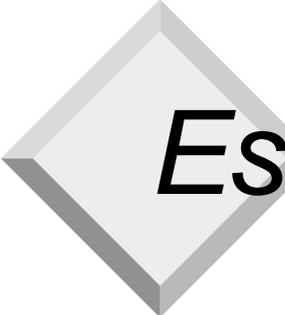
Analysis and Intuition

Analysis	**Intuition**
❖ Systematic	❖ Playful
❖ Rational	❖ Imaginative
❖ Convergent	❖ Divergent
❖ Cause-effect	❖ Rule breaking
❖ Analytical	❖ Integrative
❖ Divide and conquer	❖ Patterns
❖ Objective	❖ Subjective
❖ Impersonal	❖ Personal

Estimation and Judgment

❖ How many employees (in total) did IBM have worldwide on Dec. 31, 2005?

❖ After making your best estimate, give a low estimate and high estimate so you are 95% sure that the true answer falls within these limits

Low_____   High_____

Overconfidence

Respondant	Topic	Target	Result
Harvard MBAs	Trivia facts	2%	46%
Kellogg MBAs	Starting salary	49%	85%
Chemical employees	Industry & co. facts	10%	50%
Computer managers	Business: co. facts:	5% 5%	80% 58%

More Overconfidence

❖ "A severe depression like that of 1920-1921 is outside the range of probability"

  Harvard Econ. Society Weekly Letter, Nov. 16, 1929

❖ "With over 50 foreign cars already on sale here, the Japanese auto industry isn't likely to carve out a big slice of the U.S. market for itself"

  Business Week, August 2, 1968

❖ "There is no reason anyone would want a computer in their home"

  Ken Olson, DEC founder, 1977
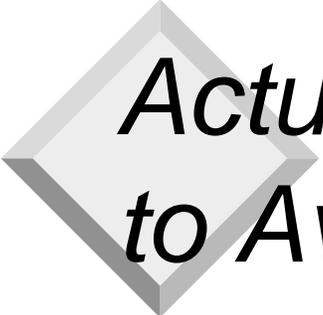
Actual Rules Used By Managers to Avoid Tradeoffs

❖ A Holiday Inn, looking for 500 new hires in a new facility, interviewed 5000

❖ Hotel managers, when interviewing, excluded all candidates who smiled fewer than four times in the interview

❖ This applied to people competing

for jobs in all categories

<u>Newsday</u>, Long Island, NY (1993)

Analysis and Intuition

- ❖ Consider skills such as identifying important factors, goals, patterns, framing, keeping track, combining information, making tradeoffs

- ❖ What are people good at? Bad at? What are computers good at? Bad at?

- ❖ How could we combine human and computer "talents"? Batterymarch example