Decision Making as a Process

Perception of current state
Recognition of problem, opportunity, source of dissatisfaction
Framing of problem situation and deciding how to decide

Search
Search for alternatives (look for solutions)
Generate alternatives (create, enact alternatives)

Evaluation
Explore and evaluate options
Outcomes, consequences, probability of success

Choice
Select an option to act on
Goal attainment, satisfying constraints, minimizing risks,
affective responses, ethical considerations ...

(Implementation – Outcome – Learning)

Levels of DM

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| Individual   | •Search using accessible, familiar sources  
               •Evaluation and choice based on habit, intuition, past experience |     |                      |        |        |
<p>| Group        |            |                 |                                     |        |        |
| Organization |            |                 |                                     |        |        |</p>
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|             | Search using accessible, familiar sources |        | Evaluation and choice based on habit, intuition, past experience |        | Individual ...
| Group       |            |        |            |        |        |
|             | Groups are formed to improve DM by combining members’ information, knowledge |        | Search requires information sharing among group members |        | Group members, group dynamics, roles, leaders |
|             | Evaluation and choice influenced by group norms, openness, cohesiveness, ... |        |            |        |        |
| Organization|            |        |            |        |        |
|             | Organization defines problems to work on |        | Search guided by rules, routines |        | Designated decision makers, Policies and procedures |
|             | Evaluation and choice based on criteria and premises defined by organization |        |            |        |        |
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Uncertainty grows as consequentiality increases

Goals and interests become increasingly complex, constrained, contested

Information seeking and use intensifies

but it is individuals or groups who use information to decide

Individual Decision Making: Heuristics and Biases

(Kahneman and Tversky 1977, Kahneman 2011)

Heuristics are used to reduce mental effort in decision making, but they may lead to systematic biases or errors in judgment.

1. Representativeness heuristic
2. Availability heuristic
3. Anchoring and adjustment
4. Decision framing
5. Prospect theory
Representativeness Heuristic

Used to judge membership in a class
Judge similarity to cognitive stereotypes

Representativeness Experiments (1)

Susan is very shy and withdrawn, invariably helpful, but with little interest in people, or in the world of reality.
A meek and tidy soul, she has a need for order and structure, and a passion for detail.

Which is more likely:
Susan is a Librarian
Susan is a Teacher
Susan is a Lawyer

Representativeness Experiments (2)

Linda is 31 years old, single, outspoken, and very bright.
She majored in philosophy.
As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.

Which is more likely:
Linda is a Bank Teller
Linda is a Feminist Bank Teller


Representativeness Examples (3)

Scenario 1.
An all-out nuclear war between US and Russia.

Scenario 2.
A situation in which neither country intends to attack the other side with nuclear weapons, but an all-out nuclear war between US and Russia is triggered by the actions of a third country such as Iran or North Korea.

Which scenario is more likely?

Representativeness Heuristic

Used to judge membership in a class
Judge similarity to cognitive stereotypes

People are insensitive to prior probability of outcomes
They ignore relative sizes of categories or base rate frequencies

People are insensitive to sample size
They draw strong inferences from small number of cases

People have a misconception of Chance: Gambler’s Fallacy
They see a ‘normal’ event and think it ‘rare’:
they think chance will ‘correct’ a series of ‘rare’ events

People have a misconception of Regression:
They see a ‘rare’ event and think it ‘normal’:
they deny chance as a factor causing extreme outcomes

Availability Heuristic

Used to judge likelihood or frequency of event, occurrence
Causes of Death
People’s Choice
Annual US Totals
Newspaper Reports/Year

Lung Cancer 43% 140,000 3
Vehicle Accidents 57% 46,000 127
Emphysema 45% 22,000 1
Homicides 55% 19,000 264
Tuberculosis 23% 4,000 0
Fire and Flames 77% 7,000 24

(Combs & Slovic 1979, see also Kristiansen 1983)
Anchoring and Adjustment

Used to estimate value or size of quantity
Start from initial value and adjust to final estimate


Anchoring Example

103 students at Berkeley asked to estimate the population of Chicago:

Is the population of Chicago more or less than 200,000?
What is the population of Chicago?

Is the population of Chicago more or less than 5 million?
What is the population of Chicago?

With the low anchor, the median estimate was 600,000.
With the high anchor, the median estimate was 5.05 million.

(Karen Jacowitz, Kahneman 1995)
Anchoring and Adjustment

Used to estimate value or size of quantity
Start from initial value and adjust to final estimate

People are influenced by an initial anchor value
anchor may be unreliable, irrelevant
adjustment is often insufficient

People overestimate probability of conjunctive events
People underestimate probability of disjunctive events

Anchors may be qualitative:
people form initial impressions that persist and are hard to change


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