Determining Objectives
(and measurable attributes)

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Structured Decision Making Workshop

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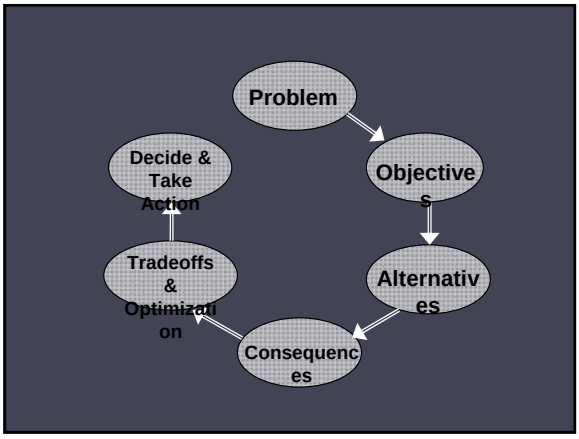


Determining objectives

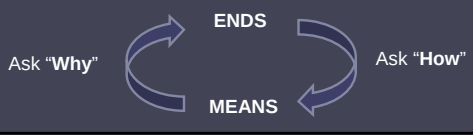
- **Objectives are specific to decisions**
  - *Fundamental objectives are the broadest objectives directly influenced by a decision*
- **Fundamental (or ends) objectives**
  - What you really care about in a decision
    - *Example: sustain loon populations*
- **Means objectives**
  - How you get to the ends
    - *Example: eliminate lead in fishing tackle*

Fundamental & means objectives

- Try to use only **fundamental** objectives to measure performance of alternatives
- **Focusing on means objectives**
  - Can lead to skewed weighting of your true objectives
  - Can limit creative problem solving
- **To separate ends from means objectives**
  - Are the objectives where you really want to go (or not go) or means to that end?
  - **WITI Test: *"Why Is That Important?"***

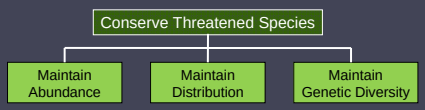
Brainstorm objectives

- To discover ends objectives, ask **WHY**
  - Why is it hard to make this decision?
  - What are your critical concerns?
  - Think of solutions
- To discover means objectives, ask **HOW**
  - How can I achieve my objectives?
  - What do I mean by this objective?



Fundamental objectives hierarchy

- Fundamental objectives may be parts of a broader objective (all of which you 'just care about')



- To sort out the hierarchy among fundamental objectives, ask:
  - **"What do I mean by that?"**
  - **"Is this part of something larger?"**

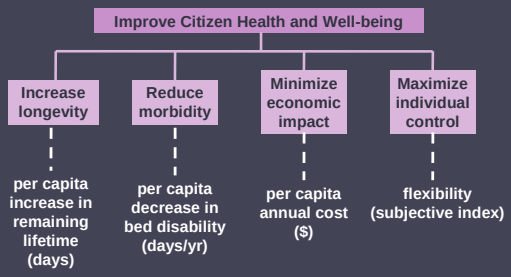
Convert objectives into measurable attributes

- **Attributes** are how you **measure** performance

= units you use to measure the consequences (outcomes) of decision alternatives

Attribute = Performance Measure = Criteria

Health plan example



Measurable attributes

- Attributes description should include
  - Content (what you'll measure)
  - Preferred direction an increase or decrease?
- Example:
  - The **objective** is restore a reproductive plant population
  - The **measureable attribute** is 3-yr mean flowering stems/m^2
  - The **preferred direction** is an increase

Three types of attributes

- **Natural attributes**
  - Number of jobs; dollars; acres
- **Constructed attributes**
  - **Sliding or relative scale** less ---------- more
  - Aesthetic value; infant APGAR scores
- **Proxy attributes**
  - **Natural scale, highly correlated with objective**
    - # days with ≥*x* particulate level/yr for air quality
    - # populations with ≥100 breeding females for viable species

Important qualities of attributes

- **Unambiguous:**
  - Clear relationship to fundamental objectives
- **Direct:**
  - Directly describe the consequences of interest
- **Comprehensive**:
  - Cover full range of possible outcomes
- **Operational:**
  - Suitable information available
- **Understandable:**
  - Readily understood and easily communicated
- **Represent uncertainty:**
  - Transparent and appropriate depiction of uncertainty

Tips on measurable attributes

- Use natural attributes as much as possible
- Clearly link proxies to real objectives
  - Use indicators cautiously
- Mixed quality-quantity scales may be useful
  - Water quality * amount of shoreline
- Weighted scales may be useful
  - GPA

Rapid prototype to test your objectives

- Do the objectives capture the relevant interests?
- Do they really distinguish among alternatives?
- Are the objectives really distinct and independent of each other?
  - Are there excess or redundant objectives?
- Could you be comfortable with a decision selected by these objectives?
- Could you explain your choice to others & the public?
  - If not, what is missing?

Means Objective -- Network