

Your boss just called...

CSP3176 - Adaptive Management: Structured Decision Making for Recurrent Decisions Chapter 13

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Good decisions get implemented

- The main way to get a decision implemented is to make a compelling decision
 - Making the decision maker look good
 - There are things about the process that can help achieve that compelling decision

Traps that reduce decision quality

- Not involving the *real* decision makers
- Solving the wrong problem
- Unbalanced working group
- Lack of creative and different alternatives
- Inability to deal with competing objectives
- Too much time on refinement of unimportant details
- Not involving those who implement the decision
- Lack of credibility of content and analysis

Outline

- Diagnosing the problem
- The project team & other participants
- The value of prototyping
- Feedback with the decision maker
- Documentation
- Communication – the core decision
- Design and communicate the process
- Dealing with potential impediments

Diagnosing the Decision Problem

- Should I work on this or pass?
- Your first task—the 0th prototype—is problem formulation
- You're looking for the core structure of the decision before you've even started
- Ask all the questions we outlined earlier, including:
 - Who is the decision maker?
 - What has to be decided?
 - What impedes the decision?
- Run a quick PrOACT analysis in your own head

Diagnosing the Decision Problem

- Now, is this adaptive management?
 - Is the decision iterated?
 - Is the problem rooted in scientific uncertainty? Or is this really about disputed objectives?
 - See the criteria in the DOI Technical Guide
- Are the needed resources & decision makers available?
- Decision makers may be convinced this is a good adaptive management decision problem...even when it's not.

Diagnosing the Decision Problem

- The point is that your initial diagnosis is what's going to lead you to next steps, like
 - Building a core team
 - Identifying and engaging the decision maker(s)
 - Developing the next prototype

Participants in the Process

The Project Team

- A small group (1 – 5)
 - Overall team leader
 - Modeler
 - Key technical staff
 - Facilitator?

The Project Team

- Project team attributes
 - Enjoy making the decision maker look good
 - Enjoy working together
 - Skilled in a mix of areas: science, policy, decision analysis
 - Access to the decision maker
 - Can see the big picture

Important Relationships

- The project team needs to engage
 - The decision maker
 - Stakeholders & partners
 - Those who'll have to implement the decision
 - Experts

The Decision Maker

- Who's the decision maker?
 - The person with the authority and resources to implement the decision
 - This can be difficult to diagnose
- Project team needs easy access to the decision maker
- Routine feedback, *at all phases*, between the project team, decision maker, stakeholders, experts and those who have to implement the decision is essential. No “wall of virtue”.

Whose Values Matter?

- The person with the authority and resources to implement the decision
- Unrealistic to assume decision makers fully understand their objectives (see Keeney 1992)
- Sometimes the decision maker wants other participants' objectives to be included
 - This is bad if they don't really want other objectives
 - Routine feedback with the decision maker is essential here
 - Participants want to be useful, not used

Stakeholders

- Including more people in the decision can add some things
 - objectives, creative alternatives, fairness, ownership
- Risks related to inclusiveness
 - e.g., logistics, personalities
- Finding the sweet spot, an art form
 - Criteria
 - Stakeholder analysis

Stakeholders

- Stakeholders want to feel useful, not used
- Inclusiveness can't overcome a bad decision
 - Working with the wrong decision maker
 - Decision doesn't flow from the objectives
 - Disputes over science v. values

Working with Experts

- Outside experts help with models or provide information that isn't available
- Expert credibility is important to decision makers
- Modeler often on the project team

Working with Experts

- Definition and attributes (see Ayyub 2001)
 - extensive experience
 - professional recognition by peers as an expert
 - ability to work and communicate in a group setting.
- Other attributes
 - multiple points of view/approaches (for groups)
 - trust
 - understand role
 - can deal with management objectives

Facilitator role

- Is there one?
- Eliciting objectives, alternatives
- Expert workshops (see Ayyub 2001)
- Decision workshops
- Do you just need a time keeper or one that is fully immersed in the decision problem and has a decision analysis background?

Prototyping

and Feedback from the
Decision Maker

Prototyping: Round 1

- Round 1: A Rapid Prototype
 - Develop a full, but coarse, prototype as fast as you can
 - Focus on the key elements
- Include all the elements of a structured decision, but keep them very simple (find the skeleton of the problem)

Prototyping: Round 1

- Assess the first prototype – feedback with the decision maker
 - Is this the right problem?
 - Does the framework make sense?
- Sensitivity analysis—where is the most important place to focus work?

Prototyping: Round 2 and Beyond

- Go to a larger group
 - Using the prototype as a rehearsal (restarting)
 - Using the prototype as a starting point (revising)

Prototyping: Round 2 and Beyond

- What will you examine?
 - Changing the structure: reframing
 - Revising the objectives: stakeholder involvement
 - Developing more alternatives: engineering
 - Improving the models: research (empirical or elicited)
 - Enhancing the analysis: optimization
- Examine, test, scrutinize. Revise, repeat.
- Sometimes these needs can be anticipated early in the process, sometimes they emerge without warning

Involve the Decision Maker

- The whole purpose is to aid the decision maker
 - Be deliberate about involving the decision maker(s) throughout the process
- Each prototype provides a strategic juncture for feedback
 - Getting the problem right
 - Getting the risk tolerance right
 - Objectives – What is it you really want this decision to do for you?
- Expect this all to evolve as the prototypes move forward

Documentation & Communication

Documentation

- People say using a SDM approach will help with documentation
- It's not going to happen on it's own

Documentation

- Lot's of decisions in a decision problem: which ones need to be documented?
 - choice of experts, objectives, alternatives, choice of models, any elicitation elements, decision thresholds
- Rationale for the decision – most important
- Is there going to be a report or paper?

Communication

- Everyone vested in the decision needs to see the core decision structure
- Focus on the core objectives, alternatives, consequences, and trade-offs and the decision itself.

Communication

- The decision maker should be able to convey to the stakeholders and other interested parties:
 - How the decision was made
 - How you connected all the dots
 - What values were expressed in the decision
 - How trade-offs were managed.

Design & Communicate the Process

- Design the process deliberately
 - Outline the steps (a roadmap)
 - Be clear who is involved and at what stage
 - Especially be clear when the decision-maker(s) and stakeholders will be consulted
- Plan to be adaptive
- Communicate the process, to manage expectations

Dealing with Potential Impediments

Dealing with Institutional Impediments

Problem: Poor problem statements

Solution: Use Pr.O.A.C.T approach

Problem: Framing *hidden objectives* as *scientific uncertainty*

Solution: Define objectives 1st, then work on technical issues

Dealing with Institutional Impediments

Problem: Inability to garner buy-in from important stakeholders

Solution 1: Bottom-up → Convince decision implementers that it helps them to do (and communicate) job in a transparent fashion

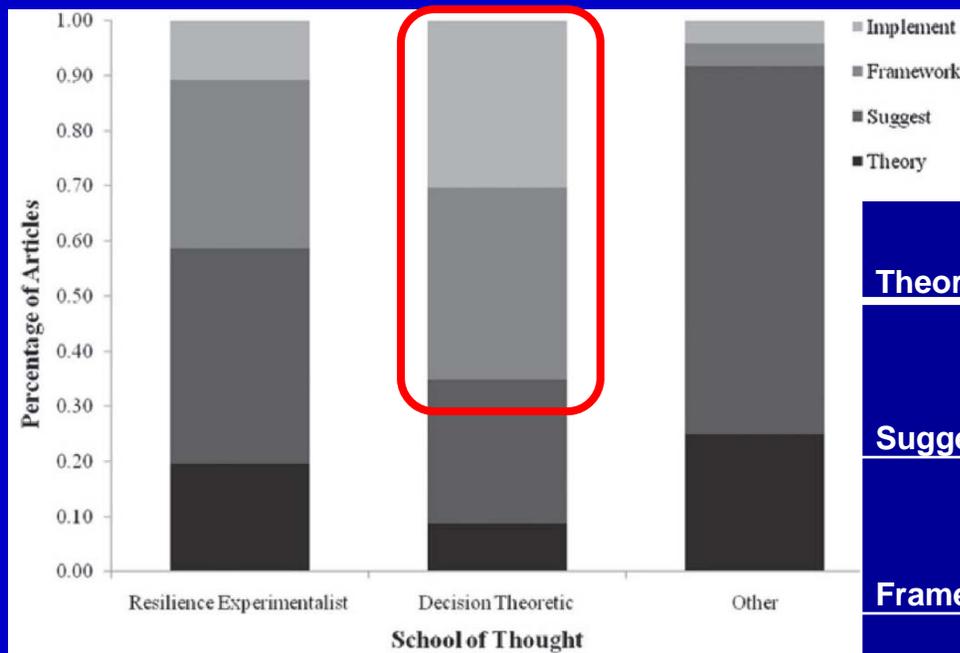
Solution 2: Top-down → Show decision-makers it helps the bottom line

Dealing with Institutional Impediments

Problem: Co-opted definitions of SDM and ARM

Examples: Adaptive meaning flexible, trial and error, learning by doing → All *reactive* approaches

Solution: Use decision-theoretic approach



McFadden, Hiller & Tyre. 2011 *J. Enviro. Mgmt.*

Theory	AM discussed in a general theoretical context but lacked a description of a specific case study
Suggest	Acknowledged AM as an appropriate approach for a particular mgmt problem but did not provide a complete analysis of a specific problem
Framework	Acknowledged AM as an appropriate approach and provided a decision-based framework for a particular mgmt problem
Implement	Same as framework plus a mgmt action was implemented, the outcome monitored, and the results incorporated into the next mgmt decision



Dealing with Technical Impediments

Problem: Difficulty in solving large, complex problems

Solution: Use Pr.O.A.C.T approach to simplify problem into modular steps

Problem: Communication of results and approach to non-statisticians

Solution: Describe results and approach using familiar examples, & emphasize conceptual and graphical over mathematical approaches



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You can handle it.