

DECISION ANALYSIS

SMART Wrap Up

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Let's go back and think a bit about this process. And let's run through the 'steps' that we took. We started with a [1] broad objective, and the first point I want to make is how essential it is to go from the broad objective to [2] measurable goals. To illustrate this, I'm going to tell you a story.

Some years ago I was invited to a meeting of people who worked in analysis, GIS people, modelers in the Forest Service. It was a time when ecosystem management was becoming the buzz word, and the focus of the meeting was on the ecosystem management. My job was to sit through the meeting and then give what was billed as a half-hour provocative talk at the end of it. And just prior to my talk, the deputy director of the Forest Service gave a talk, where he really spelled out the broad objectives of ecosystem management and lauded the approach the Forest Service was taking in ecosystem management.

When it was my turn to talk, I said, "You know, I've spent the last three days looking for something to do while everybody has been presenting their papers, and what I have been trying to do is design a board game for kids to illustrate the principles of ecosystem management. And I've had some really neat ideas for the board game, but I haven't come up with any way of figuring out who wins the game." And the reason I hadn't come up with any way of figuring out who wins the game, was because the broad objectives were so broad that there was no basis on which to do that. That is why it's essential to go from the broad objectives to measurable goals. You can't figure out winners until you've been specific about goals and you know how to measure them.

The next step was [3] imaginative options, and I've already spoken about how important it is to make sure that the options are, in fact, imaginative.

Then, we go to [4] scoring the options against the goals. And again, let me emphasize, that that is something that is purely routine. There's no argument there. It's collecting information.

[5] Choosing the weights is where one could have a lot of argument. And if one were facilitating a meeting, one might even come up with different sets of weights that reflect the preferences of different groups of people.

One then [6] ranks the options.

And then the really important part is the [7] sensitivity analysis. Because this is where you look to see how much play there is in terms of whether the solution is very robust or whether there are a number of solutions that, depending on how you change the weights, seem to be equally acceptable.

This particular technique has a name. It is called SMART. SMART stands for Simple Multi-Attribute Ranking Technique. It's a good technique in the sense that it is so intuitive. The only difficulty with it is the problem of coming up with the weights. There are other techniques out there that aim to solve the same kind of problem.

One is called AHP, which stands for the Analytic Hierarchy Process. The Analytic Hierarchy Process is less transparent and less obvious than SMART, but by comparing things two at a time, it gets by the problem that one has in SMART of coming up with the weights. So if we go back to the diagram, where we were trying to characterize decision analysis problems. What we have done is we've found two techniques up here. The one is SMART and the other is AHP.

What I would like to do is cover just a few points about SMART. I've already spoken about the importance of the sensitivity analysis. Not only is it important from the point of view of looking for win-win solutions, but the discussion, presumably under the aegis of a facilitator, really creates a situation in which people are going to buy into the solution. It is by doing the sensitivity analysis and discussing alternatives and changing the weights that one gets people to either accept that their preferred option is not going to be the one you go with or get other people to accept that somebody else's preferred option is, in fact, the way to go. This is where you get the kind of discussion that makes people walk away from the meeting reasonably happy with the solution.

The next point I would like to make is that, of course, it is possible to put bias into an analysis like the SMART technique. For example, when we first looked at the goals and we put the weight for the 'cool' factor down at 25, there was a certain element of bias in that the teenagers' concern about cool was not worth taking seriously. The beauty of the SMART technique is that

if there is bias, it's going to be apparent. Because the technique is transparent, the only way you can introduce bias is through the weights. And so one can pick that up and challenge it during the sensitivity analysis.

The next point I'd like to make is that some people might say, 'why a decision process like this?' What I've outlined is the steps of a very well thought through decision process. But why go with it? And the answer I always give is, 'why are resource management agencies always in court?' 'Why are they being sued?' And the answer usually is that the basis of the lawsuit is not that it was a bad decision, but that it was a bad decision process. I've been in situations where I've been asked to give advice on decision analysis where a decision's been made which I agree with, but the way it has been made has led a judge to say that it is a capricious decision. And the only way to stop yourself from getting into that situation is to have a well-documented, logical decision process.

The alternative to a decision process like this is one where people fight over the options, and the real value of a decision process is that it forces you to focus on goals, not on options. A dysfunctional process is one where people discuss options. Because when people discuss options, the only way they can argue is by touting their particular option, and it's a question of who shouts loudest or who is most persistent in pushing their particular option. It's kind of like a political campaign where everybody spells out the good points of their option and ignores the bad points. Because of that, there's no sense of how to rank the options.

If you concentrate on the goals instead, then you can have an argument that is less emotional, and the options only shoot out at the end when you do the ranking. And the way to curb emotions at that point is through the sensitivity analysis. This is where the scoring of the options on the thermometers, being a routine activity, really takes a lot of the heat and emotion out of the decision analysis process.

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