

US Fish and Wildlife Service | Determining Objectives _part 2_

[MUSIC PLAYING]

I'm going to move on now to step three. Step three, which has to do with structuring objectives. So let's say we've gone through a stage where we've done a lot of brainstorming. We've got a long list.

Look, I've done this in workshops where we've ended up with 60 objectives on our first list. I mean, we've just had pieces of paper plastering the wall with all kinds of different objectives. You can't work with 60 objectives. You can't work with that many sheets of paper on the wall and really understand what's going on.

What you need to do is really understand how those objectives sort of fit together, and which ones are really critical to talk about, and how they're layered in hierarchies. So I'm going to talk about three steps here in the structuring. The first is classifying objectives. The second is distinguishing fundamental objectives from means objectives. And the third is building hierarchies of objectives.

So now we're starting to bring in some tools from decision analysis to help us winnow through and understand the nature, the structure, of that set of 60 objectives that we had brainstormed on the board. And what we're trying to do is get that down, the key set of objectives that really expresses what's important about this problem and what we need to achieve. And those are the things that we're going to use in the decision analysis as we go forward.

So what are these four kinds of objectives? Fundamental objectives. Fundamental objectives are the ones that we're going to use for decision analysis. So, the basic reason for caring about the decision. These are essential to understanding the decision. You can't do a good job, you can't make a good decision, without understanding how it affects these fundamental objectives, and without focusing on the effect on these fundamental objectives.

Means objectives are objectives that influence the achievement of fundamental objectives, but are not necessarily essential. We don't care about them in and of themselves, but only to the extent that they help us get to fundamental objectives.

Very helpful to know which ones are means objectives, because we can take our focus off of those, understanding that those are not essential, but they might be a means to something else. That's a very

valuable distinction. And I'll talk more about that distinction in a few minutes.

Process objectives. So this is interesting. Process objectives are concerns about how the decision is made, rather than what decision is made. So a common one is, look, I don't care what the decision is, but you just got to make sure the stakeholders are involved.

That's a process objective. It's an objective about having the stakeholders involved. And that's about how we make the decision, the steps that we take, the structure that we use, the procedures, organization, meetings, et cetera. The process that we use for making the decision, Process objectives are very different from fundamental and means objectives, and need to be treated differently.

Finally, there's strategic objectives, which really operate at a higher level. They're objectives that cover all of the decisions that are made by an organization or person by the decision maker. And so, they're objectives that have to do with other decisions that are related to this one perhaps, or tied in some ways, but aren't critical to this decision.

And so we have to be aware of strategic objectives, but they may not be the key thing that's helping us make the decision for this particular decision. So let's talk about each of these in turn a little bit more.

I want to talk first about process objectives, actually. So here's a quote, actually, from Keenie.

"Especially in public decisions made by the government, both what is chosen and *how* the alternative is chosen are important. In other words, the process of decision-making in these situations matters."

Look, we actually have quite a few laws at the federal level that we operate under. APA, FACA, NEPA, which in some sense are largely procedural laws. They're not really governing what decision you're going to make. They're only saying, this is how you have to make the decision.

And so what Congress has said in enacting those laws is, the process by which you make decisions is important, and here are some of the elements that are important. So anyway, the point is we do have a source for process objectives, namely, some of these laws at least at the federal level.

A lot of the states have Sunshine Laws that convey procedural objectives as well. They talk about how state management decisions need to be made, and how the public needs to be involved and aware.

But anyway, I think what's useful here is recognizing that there's a difference between objectives that govern what decision to make versus objectives that govern how to make the decision. OK. And the

process objectives we use to help shape how we make the decision, the steps we're going to take and how we're going to do it, but they're not the things that help us discern among the alternatives.

So here's a discussion point that you can have for later. What examples have you encountered of processing objectives, and how did you deal with these?

Let's talk next about strategic objectives. This is really a hard one to define and get your head around. But I think sometimes when you start to recognize these, there's sort of a light bulb that goes on. So strategic objectives are objectives that concern the effects of this decision on other linked opportunities. Things like setting precedents, or effects on a larger mission or mandate, or the image.

So one of the strategic objectives, I think, actually is-- one that's stated quite often is public trust. We want there to be public trust in our agency. So you're a state agency, and you want the public to trust and feel that you make good decisions.

Well, that's interesting. That's an interesting objective that you could have for every single one of the decisions that you make. Every single decision you make is an opportunity to build trust with the public. But here's how you know this is a strategic objective and not a fundamental objective.

On this particular decision, can you achieve public trust through this decision alone? No, really. I mean, the public trust is going to occur over the long-term as a result of a lot of decisions that are made. This decision adds to that. But the achievement of that objective is not controlled by this decision alone.

Another way you can recognize strategic objectives is, can you really use this objective to discern well among the alternatives you're talking about. So in a particular decision that you're setting-- deer management, deer harvest regulations for Pennsylvania-- are you going to build public trust out of that one decision? Does the objective of building and maintaining public trust allow you to discern among the alternatives?

Well, maybe not. Maybe not alone, right? So this is a strategic objective that's really looking at the decisions we make on a broader scale.

In a way, what we're talking about is link decisions here. Sometimes those linkages are really clear. Sometimes they're not. But at any rate, it's useful to recognize that there's some objectives that sort of operate at a higher level, and identifying those is sometimes helpful.

So a discussion question for you to think about yourself and perhaps discuss with some of your colleagues. What examples have you encountered of strategic objectives? And how did you deal with these?

Fundamental objectives. As you will see later, this is the key piece. This is what we're using to discern among all our alternatives. These are the objectives that are operating in a particular decision.

So how do we know what is a fundamental objective? Fundamental objectives need to be controllable. The alternatives that are appropriate to this context actually influence the degree to which this objective is achieved. In other words, the subjective matters in helping discern among the alternatives.

It's not so broad or high level to be beyond control with the alternatives that are available for the particular decision context. So fundamental objectives are controllable. Fundamental objectives are essential. They must be relevant to every alternative that they are the objectives that are essential to achieve in this decision.

They're not too narrow and can't be substituted with something else. They're not just one possible means to what we care about. They are the things that we care about.

Now it is important to note that what's fundamental does depend on the decision context. What's fundamental in one case might be a means objective for another case. It might be irrelevant for another case. And so really, the objectives, of course, are always context specific.

This brings us to the question about, how do we distinguish means objectives from fundamental objectives? So fundamental objectives are the things that we really care about. We care about them as ends in themselves.

Means objectives, we only care about to the extent that they help us achieve fundamental objectives. And we really need to separate these in a structured decision-making process. If we don't, what can happen is a number of things. Two real pitfalls of failing to distinguish fundamental and means objectives.

First is that if we're using means objectives in our analysis, they can often lead to skewed weighting of your objectives. So imagine that you've got four or five means objectives that are all tied to a single fundamental objective. And then, one mean objective over here that's tied to this other fundamental

mean objective. This other fundamental objective.

So we've got five here and one here. But really what we care about is these two fundamental objectives up top. Well, if we look at the five, we look at the one, we may end up getting-- if we gave equal weight to all of those six objectives, we would end up giving five times more weight to this fundamental objective than this one, even know that's not necessarily what we meant to do.

So having means objectives in our process can lead to skewed weighting of our fundamental objectives. So that's one of the pitfalls.

The other pitfall is that if we're focused on means objectives, it may limit creative problem solving. Because remember, means objectives are objectives that are ways to achieve our fundamental objectives, but may not be essential.

But if we treat them as if they're essential, we're basically locking ourselves into only one path to achieve the fundamental objective. And so, we may be looking at an overly constrained problem. We may think that there's only one way to get to what we want to achieve, when in fact, the real creative alternative that really solves our problems, that silver bullet, is one that goes in a completely different direction and doesn't achieve the means objectives at all, but does achieve all the fundamental objectives we care about. So limiting that creative problem solving is the other concern with not separating out fundamental and means objectives.

So again, what are these? Fundamental objectives are asking what's the bottom line? What's the fundamental value? What do you really care about in this decision? Whereas the means objectives are saying, what methods will get you to the fundamental objectives? How can you achieve the fundamental value?

And so, as an example, we had said before maybe an objective is to increase loon populations. The means to that might be to minimize lead and fishing tackle. But notice that minimizing lead in fishing tackle isn't fundamentally important to us. In fact, if we could increase loon populations without minimizing lead in fishing tackle, that might make life easier for us, right?

So we don't really care in this context. Well, maybe you do. But in this particular context, what I'm trying to paint the picture of is that we don't care about minimizing lead in fishing tackle except to the degree

that it helps us increase loon populations.

But one way to ask this question is, if I could achieve the increased loon populations without minimizing lead in tackle, would that be OK? If the answer is yes, then you've identified a means objective. The lead in tackle is a means objective. And you've got an indication that the increase in the loon populations is the fundamental thing that you want to achieve.

So to get to fundamental objectives, ask and keep asking why. So why do you want to reduce lead in fishing tackle? Well, I want to do that because I want to increase loon populations.

If you can answer the question, why, then what you were talking about was a means objective, and you're starting to get to something more fundamental. But why do I want to increase loon populations?

Well, you might just stop there and say, well, just because it's important. Or you might say, well, because loons are a really important part of the boreal ecosystem, and I can't have an intact boreal ecosystem without those loon populations.

And so, a more fundamental objective then has to do with the ecosystem function of those boreal ecosystems. So the point here, though, is if you ask this question, why is that important, and you can answer it, then you probably were talking about a means objective.

But when you get to the answer that says, well, just because. I care because that's what I care about, or it's the law, or this is important, or that's my inherent value. When you can no longer ask why, then you've reached a fundamental objective. And it's really important to be able to keep asking that.

And I've had plenty of situations where it's been six layers before we've really got to what was fundamentally important. And that all those layers underneath were means objectives. And the insights that arise there about, what is it we're really trying to achieve, often allow a lot more creative thinking, a lot more clarity of thought.

What about means objectives? How do you identify them? Well, if you ask and keep asking, how, that's going to lead you into means objectives. If your fundamental objective is, I want to sustain or increase loon populations, how can I do that? How can I address this concern? How can I measure success? How can I achieve this?

That's going to lead you to means objectives. And ultimately, those answers may help you to find

creative alternatives. I mean, there is an interesting connection here that fundamental objectives are connected to means objectives, to means of means objectives, to means of means objectives. But as you get further down, you're getting closer to the alternatives, the actions that you actually want to take.

And so, the "how" question is good for moving down in that direction. OK, so fundamental versus means objectives. To find fundamental objectives ask, why? To find means objectives ask, how?

So let's look at a couple of examples and think about fundamental and means objectives. So we talked about a concern of ballast water bringing invasive species. Well, some potential objectives here include prohibit ballast dumping, minimize invasive species introductions, or sustain native species.

So think about this a second. You can pause the video if you want to discuss it with your neighbor. Are any of them means objectives? Are any of them fundamental objectives? Are they all fundamental objectives? Are they all means objectives? What's going on here? Give that some time.

OK, when I look at this-- prohibit ballast dumping. Well, I'm going to ask the "why" question. Why do I want to prohibit ballast dumping? Well, if I prohibit ballast dumping, then that might minimize the number of invasive species that are introduced into my lake, let's say.

Oh, OK. All right. Well so, prohibiting ballast dumping is a means to minimizing invasive species introductions. Well, why do I care about minimizing invasive species introductions?

Well, you could stop there and say, well, I've got a mandate. Park service often has written into their fundamental management guidelines to prevent the establishment of invasive species. So they might just say that's a fundamental objective.

Or maybe the answer would be, well, it's not that invasive species-- so it's not that that I care about so much. It's just that they disrupt the native species, and I really want to sustain the native species. So why do I want to minimize invasive species? Because I want to sustain native species.

All right. Good. Now we're getting to something that's more fundamental. So in this sequence of objectives that we've written down here, I think we've gone from something that's the most means level, to prohibit ballast dumping, to a couple layers of getting more and more fundamental objectives. And we could keep going. We could keep asking this question.

Here's another example. You aren't talking with landowners. That was a concern. And we had before, well, the objective might be to increase communication. Well, why? Why do I want to increase communication?

Well, maybe I want to increase communication because I think that's going to maximize community engagement, like the community may participate in a friends group. They may come on some of the days that we have that we're pulling garlic mustard, which is an invasive species in the East. A lot of groups will get public volunteers to come and pull garlic mustard when it's blooming.

So we might want to maximize community engagement. Well, why do we want to maximize community engagement? Maybe we feel like if the community's engaged, they're going to support our habitat conservation initiatives. We'll have more funding. We'll have more public support to do habitat conservation.

OK, great. So we want to maximize habitat conservation. Why do we want to do that? Well, that's our mandate. All right, so here, again, we see a sequence of means objectives that lead us to a fundamental objective. And we got there by asking, why, why why?

Third example. I won't have enough money for this. Well, that's the concern. The objective might be to minimize cost. Why do I want to minimize cost? Well, that might be fundamental. But you could ask, well, what would I do with those cost savings?

Well, I'm going to take those cost savings and spend them on some other conservation. So what I really want to do is maximize conservation with the allocated dollars that I have. If your agency's like mine, we don't like to give money back once it's been allocated. We want to use it all wisely.

And so minimizing costs is sort of the means to maximizing our ability to do as much conservation as possible with the dollars that we've been allocated. OK. So again, we can start to see the distinction between means and fundamental objectives.

It's useful to note though, and I mentioned this earlier, that objectives are decision specific. So what's fundamental in one context and a means objectives in one context may not be fundamental or means in the other, OK? So fundamental objectives are the broadest objectives for that particular decision, but they may not be fundamental objectives for another decision.

So, for example, in one decision we have, we might say the fundamental objective is to increase loon populations, and the means is to minimize lead in tackle. And that might be the decision that's being made by, let's say, a Partners in Flight Group or an LCC that's concerned about increasing loon populations.

But there might be a broader group. It might be a regional-- you might look at a different set of decisions that are being done at a regional level. And the fundamental objective is to conserve biodiversity in the Northeast. And one of the means to do that is to increase loon populations.

These are very different decision contexts. They're going to be different decision makers. They're going to be different kinds of decisions that are being made. In the first case, we might be talking about on the ground management actions. In the second case, we might be really talking about allocation of grant money among partners.

So there may be very different decision contexts that fundamentally are trying to achieve something different. They have different fundamental objectives. Now what's curious here is that the fundamental objective for decision one is a means objective for decision two. The point here is just that you can't tell by looking at an objective whether it's fundamental or a means. You have to understand the context in which you're talking about those objectives. The decision contexts.

We were doing again a workshop, then, fairly recently-- that's why it keeps coming up-- but with Nature Conservancy. And we were having this discussion. And we were working with state directors. Nature Conservancy state directors.

And this one woman stood up and said, this is the problem we're struggling with. She said, all of the objectives that we've written down that we're using to guide our management, they're all means objectives. They're not the things that we actually care about in the end.

And she had been struggling with this. And all the other directors that were there said, yeah, yeah, that's right. And they understood exactly what she was talking about.

They didn't have the language for it. And so, this fundamental versus means objectives was really powerful language that gave them the ability to discern what was troubling them. They essentially were focusing on habitat goals. Right? Habitat objectives that they wanted to achieve. Acres in particular.

And that's what they were gearing their decisions around, and their management planning around. But they really cared about, fundamentally-- if you ask them, why do you care about those acres? They don't care about the acres themselves. What they care about is the populations and the ecosystems that are supported by those acres of habitat. Those are the fundamental objective.

So if they built all the acres, but they didn't get the grassland birds to come, then they didn't achieve what they wanted to do. Their eyes weren't on the prize. And so, what was bothering them was that all of their efforts were focused at the means level, and they hadn't really articulated fundamental level. And by changing that focus, you can hone in on strategies that are really going to get you what's important in the end. And that's a reason to fuss about fundamental versus means objectives.

The third step of structuring objectives is really the structuring part. It's creating objectives hierarchy. And at this point, what I'm talking about now is all fundamental objectives. We've identified the process objectives. We're going to use them to set up how we're going to make this decision.

We've identified strategic objectives. We're going to use those in some sort of broad picture framing, but we're not going to use them to help us discern among the alternatives. And we've recognized means objectives, and we've set them aside for the moment.

Now we're left with the fundamental objectives. So maybe we've taken from our list of 60 that we brainstormed, and we've whittled that down to about 15 fundamental objectives, let's say. And now we're struggling with, well, those 15 objectives don't actually all operate at the same level. Some of them are nested within others.

In other words, fundamental objectives may be part of a broader, more fundamental objective. And to sort out this hierarchy among fundamental objectives, we're asking, is this part of something larger?

And what we do with this is we create what are called objectives hierarchies. And this is really a really useful way for us to organize our thoughts and see really what's going on. And we can use these objectives hierarchies later in the analysis to help us do a good job of weighting what's important to us and understand some of the analytical steps. And we'll get to that probably in the module on multiple objective trade-offs.

But so we're asking, is this part of something larger? So here's a little example that we have. Three objectives that we might have in some sort of generic endangered species, threatened species,

example.

We might fundamentally care about maintaining species abundance. We want to have the numbers of the animal around. But we may also want to maintain the species distribution. We want to have the species in the same places that it was historically. And we may want to maintain genetic diversity separate from the abundance and the distribution.

So we may have these three components. Those are all fundamentally important to us right. But we may recognize that really, those are all components of the higher order fundamental objective, which is to conserve this threatened species. And really, we're defining conservation as having these three components of abundance distribution and genetic diversity. So that may help us to understand how these things are all nested.

Now what's interesting, really, is not when a bunch of objectives are all clustered under a single category, but when you have multiple things that are operating at this higher order level. So we might also have an objective that has to do with minimizing regulatory burden on the public.

And maybe that's not related to conserving that species. Minimizing regulatory burden is not nested under "conserve the threatened species." But it is allowed for other economic and recreational opportunities that are affected by this particular management setting.

So we may start to recognize that these fundamental objectives cluster under a number of different higher order fundamental objectives. And this kind of clustering, this kind of nesting, I think is really important to help us recognize what's going on. So what we're doing then it is really trying to construct this hierarchy. This sort of tree of objectives, all of which are fundamental, but some which may be nested in others.

What are the desired properties of an objectives hierarchy like that? What are we really looking for? Well, we want an objective hierarchy that's complete. We don't want to leave out any areas of concern.

And sometimes, actually, when you go to develop this hierarchy, you say, wait a second. There could've been a category of recreational objectives, public recreation on these public lands.

We don't have anything in that category. Why not? Is there anything in that category? So actually, the hierarchy may help you identify places that you might have left out.

We also want non-redundant concerns. We don't want to be saying the same thing over and over again. We want to understand what the key independent concerns are, the different objectives that operate separately, so that we can avoid double counting, double weighting, the same thing.

Helps us be concise. We really want to focus on the core issues. It helps us be specific. We want an objectives hierarchy, a set of objectives that are specific, for which the consequences will be clear, for which the attributes can be readily identified.

And we want this all to be understandable. We want objectives that don't suffer from linguistic uncertainty, objectives that are clear, and clearly express what it is that we're trying to achieve.

Just one comment about objectives hierarchy and their link to influence diagrams. Sarah is going to talk about influence diagrams in a couple modules from now when she talks about consequences. Influence diagrams are a pictorial way of starting to understand how the system works.

Well, there's a related graphical technique called a means or ends-means network. And what you see at the top of this particular example, this diagram that's on page C-9 of your notebook, is that we've got this objectives hierarchy, this fundamental objectives hierarchy, at the top. But then we can start putting means objectives in. We can say, OK, how do we maintain species abundance?

Well, we can maximize the number of locations. We can minimize take. We can minimize the allele losses. That will all contribute to species abundance. How can we maintain species distribution? Well, we can maximize locations.

Well, now we can ask another layer. Well, how do we maximize the number of locations? Well, we could restore habitat. How do we restore habitat? Well, we can increase cover or reduce sedimentation.

How do we do that? Well, we can install structures that limit bank clearing or remove dams. We're basically working ourselves down.

Now we're into means objectives, and we keep working our way through means objective. Well, at the bottom of that at some point are actually actions that we would take. So what we're doing in this kind of ends-means network is kind of backing up from our fundamental objectives through the different layers and identifying actions that may lead to what we're hoping to achieve.

So there's some valuable things here. One is, this is the start of modeling. This is the start of understanding consequences. But it's also a creative way to start thinking about how you'd generate alternatives from objectives.

So this is the values-focused thinking approach. The objectives are what you start with. And from there, you work through the rest of the decision analysis.

So, useful technique will come back to influence diagrams in a few more modules. But hopefully, this allows you to see how the objective hierarchy is related to fundamental objectives, is related to means objectives, and ultimately might be related to alternative actions.

[MUSIC PLAYING]