

their search, ruling out locations that did not meet key objectives such as school quality and commuting time. They might have saved a lot of time by only visiting homes on the most fertile ground.

- Be proactive in creating alternatives. The Mathers could have asked friends or friends of friends in attractive neighborhoods to alert them if a house was about to come on the market. They might also have placed a newspaper ad themselves, specifying what they were looking for in a house, rather than merely responding to others' ads. This would accomplish what John had wanted to do by making an announcement to his classmates, but in a broader sphere and in a more discreet way.
- Think carefully about the right time to stop looking for new alternatives and make a decision. This is often a challenge. The Mathers were pushed by their realtor, who took the initiative to say, "It's time to decide." By quickly agreeing, they avoided further searching, but it may have been wiser to think twice. Only the actual decision makers can truly say when and if they are ready to make a choice.

One more thing to keep in mind as we move on: never irrevocably commit yourself to considering only existing alternatives. The Mathers have five houses on the table. But they should continue looking while they evaluate these. They may reject all five after further analysis or unsuccessful offers, and they'll want to have more options available.

## Consequences

**YOU'VE DEFINED YOUR PROBLEM**, you've structured your objectives, and you've established the set of alternatives you have to choose from. Now, to make a smart choice, you need to compare the merits of the competing alternatives, assessing how well each satisfies your fundamental objectives. To make the comparisons, you'll first need to describe how well you'll fare with each alternative. In other words, you'll need to lay out the *consequences* each alternative would have for each of your objectives. If you describe the consequences well, your decision will often be obvious—without requiring much further reflection.

This chapter presents a simple message: *be sure you really understand the consequences of your alternatives before you make a choice. If you don't, you surely will afterwards, and you may not be very happy with them.* The main benefit to be derived from describing consequences is understanding. You will gain a better understanding not only of the consequences themselves, but also of your objectives and even of your decision problem. The more deeply you understand these, the more likely you are to make a smart choice.

### Describe Consequences with Appropriate Accuracy, Completeness, and Precision

Here's a seemingly straightforward problem: You need to decide where to dine before you go to the theater tonight. You want a nice meal in a pleasant setting, you don't want to spend too much money, and most of all, you don't want to be late for the show—you know you'll have only an hour and a half to eat and get to the theater. You've identified two alternatives: Mario's reportedly offers outstanding food but only a fair setting, and the service can be slow. Luigi's, on the other hand, has reasonably good food, a superb setting, and efficient service, but it is the more expensive of the two. Neither alternative offers everything you want—that's the way life is—so your choice will depend on how well each meets your objectives and on the relative importance you assign to those objectives. If you've adequately described the consequences of your two alternatives, you will be in a position to make a smart choice.

Simple, right? Wrong. Describing consequences isn't as easy as it might at first appear. In fact, it can be downright difficult. If your descriptions are inaccurate, incomplete, or imprecise, the three biggest pitfalls, you risk making a poor choice. You won't get what you thought you would. In terms of the restaurant choice, for example, your descriptions may fall short in a number of ways:

- **Inaccurate:** What if, contrary to what you've heard, Luigi's food is actually better than Mario's?
- **Incomplete:** What if Luigi's is 15 minutes farther from the theater than Mario's? What if Mario's doesn't have a liquor license, and you expect to have wine with your dinner?

- **Imprecise:** How slow is Mario's service? How much more expensive is Luigi's?

When we think about the challenge of defining consequences, we're reminded of an old joke about a now-defunct airline that was known for its erratic service. When one of this airline's flights touched down one day, the pilot came on the intercom. "We're early," he announced, "but we're lost." If you don't define the consequences well, you may arrive at a decision quickly, but it probably won't be the right choice.

### Build a Consequences Table

The trick is to describe the consequences with enough precision to make a smart choice, but not to go into unnecessary and exhausting detail. How do you master this trick? By taking these four steps:

**Step 1: Mentally put yourself into the future.** Because the consequences of your decisions will occur in the future, often months or years from now, you need to shift your mindset ahead in time to uncover a decision's true significance. As you think about each alternative, instead of imagining you *might* choose it, imagine that you *have* chosen it. Imagine, for example, that you *have* remodeled your house following the plans just submitted by your architect. Ask yourself what life is like in the remodeled house. What is a typical weekday like? a weekend day? a summer day? a winter day? What's it like when you have house guests? How are things different when your children are three years older? Putting your-

self in the future will help you to focus on the longer-term consequences of a decision rather than just the immediate ones, and it will help you to view those consequences in their actual context.

**Step 2: Create a free-form description of the consequences of each alternative.** Write down each consequence using the words and numbers that best capture its key characteristics.

- Gather hard information (for example, the résumé of a job candidate), but also express your subjective judgments (the candidate is “eager” or “personable”).
- Use numbers where appropriate (the candidate’s desired salary is \$37,000); otherwise, use words (“extensive computer and analytical skills”). Use graphics—diagrams, photos, symbols—if they are revealing and can be used consistently (you might use a suitcase icon, for example, to indicate the candidate’s willingness to travel).
- Check your description against your list of objectives. Do your descriptions take into account all your objectives? If you’ve missed any, you will need to fill in the gaps. Does any of your descriptions imply a previously unstated objective? If so, you will want to evaluate its appropriateness and, if it is to be retained, apply it to your other alternatives. (The possibility of turning up unrecognized objectives makes starting with a free-form description of consequences preferable to describing them using your objectives as a checklist.)

**Step 3: Eliminate any clearly inferior alternatives.** This step is a terrific time saver for many decisions because it can quickly eliminate alternatives and may lead to a resolution of your decision. You essentially play “king of the mountain,” trying to knock one alternative out with another.

- Take two alternatives. Select one as the tentative king. The status quo, if it is one of the alternatives, often makes a good initial king. For example, you start by comparing your current computer to one of the new models you’re thinking about buying.
- Use your descriptions to identify the pros (in one list) and the cons (in another) of the king in relation to the second alternative, making sure you cover each objective. If one alternative emerges as clearly superior, eliminate the other and use the survivor as the king for your next comparison. If neither is eliminated, retain the second alternative and continue your comparisons using your original king.
- Continue through your list of alternatives, comparing them in pairs. At the end of the process, one alternative may emerge as the clear selection. If not, continue to the next step.

**Step 4: Organize descriptions of remaining alternatives into a consequences table.** Using pencil and paper or a computer spreadsheet, list your objectives down the left side of a page and your alternatives along the top. This will give you an empty matrix. In each box of the matrix, write a concise description of the consequence that the given alternative (indicated by the column) will have for the given objective (indicated by the row). You’ll likely describe some consequences quantitatively, using numbers, while expressing others in qualitative terms, using words. The important thing is to use consistent terminology in describing all the consequences for a given objective—in other words, use consistent terms across each row. Now, compare pairs of alternatives again, and eliminate any that are inferior.

If your choice is now obvious, congratulations! If not, you’re going to have to make tradeoffs, a task we’ll describe in detail

in the next chapter. In any case, the consequences table you've developed will be an essential tool for evaluating contending alternatives.

### Compare Alternatives Using a Consequences Table

To illustrate the power and usefulness of a consequences table, let's examine one created by a young man named Vincent Sahid. The only child of a widower, Vincent plans to take time off from college, where he's majoring in business, to help his father through a serious illness. To make ends meet while away from school, he will need to take a job. He wants a position that pays adequately, has good benefits and vacation allowances, and involves enjoyable work, but he'd also like to gain some experience that will be useful when he returns to school. And, given his dad's illness, it is important that the job give him the flexibility to deal with emergencies. After a lot of hard work, Vincent identifies five possible jobs. Each has very different consequences for his objectives, and he charts these consequences as shown on page 69.

As you can see, a consequences table puts a lot of information into a concise and orderly format which allows you to easily compare your alternatives, objective by objective. It gives you a clear framework for making comparisons and, if necessary, tradeoffs. Moreover, it imposes discipline, forcing you to bring together all your thinking about your alternatives, your objectives, and your consequences into a single, concise framework. Although this kind of table isn't too hard to create, we're always surprised at how rarely decision makers take the time to put down on paper

### Consequences Table for Vincent Sahid's Job Decision

Objectives	Alternatives				
	Job A	Job B	Job C	Job D	Job E
Monthly salary	\$2,000	\$2,400	\$1,800	\$1,900	\$2,200
Flexibility of work schedule	Moderate	Low	High	Moderate	None
Business skills development	Computer	Manage people, computer	Operations, computer	Organization	Time management, multiple tasking
Vacation (annual days)	14	12	10	15	12
Benefits	Health, dental, retirement	Health, dental	Health	Health, retirement	Health, dental
Enjoyment	Great	Good	Good	Great	Boring

all the elements of a complex decision. Without a consequences table, vital information can be overlooked and comparisons can be made haphazardly, leading to wrong-headed decisions.

### Master the Art of Describing Consequences

As in all aspects of decision making, there's a good amount of art involved in adequately describing consequences. To improve your practice, try these techniques.

**Try before you buy.** We use this memorable saying to urge you to *experience* the consequences of an alternative before you choose it, whenever this is feasible. If you're considering buying a van after having always owned sedans, rent one for a week or borrow a friend's. By experiencing the consequences first hand, they become more meaningful. In addition, you're likely to identify consequences you hadn't even thought of before. Maybe you'll discover that it's difficult to park the van in your small parking space at work, but that, on the other hand, your elderly father has a much easier time getting in and out of it.

There are lots of ways to try before you buy. If you're considering a particular college, you can stay overnight on campus, eat in the dining hall, attend some classes, and socialize with the students. You can drive a prospective commuting route between your job and a new house you're considering buying. You can build a prototype or create a computer image of a new toaster you're designing.

**Use common scales to describe the consequences.** Sometimes, verbal descriptions of consequences, however well organized, won't be sufficient to resolve a decision problem. In these cases, scales will enable you to describe consequences more clearly and to make otherwise difficult decisions more easily.

To be useful, scales must represent measurable, meaningful categories that capture the essence of your objective. Measures such as dollars (for income or the cost of products), percentages (for on-time flights), or acres (for wildlife habitat preserved) clearly have these characteristics, but how could you measure more intangible qualities, such as corporate goodwill, organizational morale, or pain and suffering? There are two possibilities:

- Select a meaningful scale that captures the essence of the corresponding objective. One of Vincent Sahid's job objectives is flexibility of work schedule. His consequences table shows a general assessment of this factor, but how might he measure it more precisely? For his decision, the percentage of scheduled work hours that can be rearranged without authorization may be an appropriate scale.
- Construct a subjective scale that directly measures your objective. You regularly make or accept decisions based on subjective scales: the A to F grade scale used in schools; the green-circle, blue-square, black-diamond ratings for the difficulty of ski slopes; and the Standard & Poors financial risk ratings for bonds. To construct a scale yourself, you need to define concretely as many levels as are needed to distinguish significant differences in consequences. Sometimes even a simple two-point scale will do (as when noting whether or not prescription drugs will be required for a given medical treatment alternative).

Trying as they may be, such struggles with difficult-to-measure objectives yield a significant benefit: determining how you would measure an objective forces you to clarify what you really mean by it.

**Don't rely only on hard data.** By all means use hard data whenever they are reliable, consistent, and relevant. But don't gravitate toward hard data simply because they seem "objective" or easy to obtain.

- Give due recognition to objectives that can't be measured by hard data. In deciding where to locate a highway, for instance, don't ignore the minimization of visual degrada-

tion in favor of the minimization of cost merely because the latter can be measured by hard data.

- Choose scales that are relevant, regardless of the availability of hard data. The last thing you want is an irrelevant scale. Better to choose “daily commute time” as a scale in determining where to live, rather than the more easily measurable but less revealing “distance from work.”

**Make the most of available information.** Sometimes hard data will be readily available, as they were when Vincent Sahid documented the salaries of his possible employment opportunities. At other times, no data will be available, and you’ll need to go with your judgment alone, as Vincent did in describing how well he might enjoy the various jobs. For some cases, though, you’ll have a little data, but you’ll need to supplement it with judgment—as well as a good dash of logic. Suppose you were considering different itineraries for a four-week trip of a lifetime for your family to Australia and New Zealand. All other things being equal, one of your objectives would likely be to minimize the overall cost of the trip, which would require estimating a number of different cost components. For airfares, you could get accurate data. For hotel costs, you’d likely use your judgment about the class of hotel that you would typically stay in and gather some recent data about the average rates of such hotels. Meal costs might be based on your travel agent’s best judgment. You would also need to use a good deal of judgment in estimating the costs of activities you’ll pursue during the course of the trip. There may be data available on some of these costs, but others will require educated guesses. Finally, you’ll need to add up all the costs—this is where the logic comes in—to get an estimate of the total itinerary cost.

**Use experts wisely.** Frequently, others—we’ll call them “experts”—will know more about the possible consequences than you do. Accountants and tax attorneys can best assess the ramifications of putting investments in your name or your child’s name. And your nine-year-old may be the family expert on how much a particular birthday present would please an eight-year-old cousin.

When you seek out the judgment of others, be sure you understand not just the consequences they project but how they derived those consequences. You will want a full explanation of the underlying data, judgments, and logic. This explanation will be especially important for controversial decisions that you will need to explain or justify to family, colleagues, or others.

**Choose scales that reflect an appropriate level of precision.** Too often, the terms used in describing consequences imply a level of precision that is higher or lower than is reasonable or useful. A rough cost estimate stated as “\$33,475” implies too much precision in the scale. It would be more accurate if it were stated as “\$33,000 ± 10 percent.”

In other cases, people make the opposite error of introducing scales that *understate* the accuracy of an estimate. They do this in the interest of simplicity, but in the process they mask meaningful differences. In one instance of such an error, state highway engineers screened hundreds of bridges to be included in a five-year upgrade and repair program. Their initial cost estimates for each bridge, which ranged from \$0.5 million to \$20 million, were accurate only to ± 20 percent. Worried about the lack of precision, the engineers created a three-point scale to compare costs: *A* indicated “inexpensive,” *B* indicated “moderately expensive,” and *C* indicated “expensive.” Unfortunately, these categories re-

flected such wide ranges of costs that they masked the level of accuracy that had already been attained. The range indicated by a *B* rating, for example, ran from \$3 million to \$10 million, making the initial 20 percent variations look trivial.

**Address major uncertainty head on.** For some consequences, you won't be certain about what will happen. When the uncertainty is modest, you can usually define consequences using an estimate or a representative figure. When comparing new cars to buy, for example, you won't know the actual prices until you negotiate a purchase, but a reasonable estimate will serve to narrow the field or even to make a choice. In this and in many other cases, the low uncertainty level will not influence the decision. For many other decisions, however, uncertainty may loom large enough to complicate your ability to describe consequences adequately. With decisions involving investments, insurance, or complex medical or legal matters, you will want to address the uncertainties explicitly—a topic we'll address in Chapter 7.

#### APPLICATION

##### To Renovate or Move?

The Mather family is ready to submit a bid—but for which house and for how much? To help them decide, Darlene and Drew review their notes on each of their five alternative houses, organizing them into lists of pros and cons. The resulting pages of notes for each house overwhelm Drew, however, and he protests, "This is too much detail for me—I need to see the comparisons on a single sheet of paper. We know what we're look-

ing for in terms of objectives—school, commuting time, all that. How well do the houses stack up against each other on each of those objectives?"

Darlene agrees that they need a more accessible format. Using her original list of "What We Want in a House" (Chapter 3) and her notes, Darlene clarifies their objectives by going into more detail on some sub-objectives. As a result, she puts together a new table, which compares the consequences for each house in terms of each of their six objectives. Darlene lists down the left side of her paper the objectives and sub-objectives, and across the top, the five houses being considered. In some rows she describes the consequences in words (such as "Poor," "Pretty good," and "Wonderful" for playgrounds), and in others she uses numbers (such as for commuting times and size of yard).

For their current School Street house, the Mathers and their realtor determine a fair equivalent "Asking price," \$175,000, assuming that an additional bedroom were added to the end of their house. The task of laying out the consequences is time consuming, but it's worth it to Darlene, who feels that this is one of the biggest decisions the family will make.

She proudly shows her effort to her husband. "You wanted one sheet, so here's one sheet." (See pp. 76–77.)

Drew is duly impressed. He needs further explanations of some of Darlene's terse descriptions, but once he understands the entries in the table, he agrees with them. Even John understands the table.

The table is useful—Drew and Darlene eliminate Eaton Street on the basis of its poor showing—but a final choice still eludes them.

*(To be continued in Chapter 6.)*

##### Lessons from the Application

The Mathers have made a lot of progress toward selecting a house. Thanks to Darlene's efforts, they can easily compare the houses in terms

### Consequences Table for the Mathers' New House

Objectives	Subobjectives	Amherst
Good location	Commute time for Drew (one way)	40 min. erratic
	Commute time for Darlene	25 min. heavy
	Distance to school for John	Bus 10 min.
	Distance to shops	Needs car, 5 min.
Quality of school	% scoring above state norm	90
	Basics (reading, math, science)	Very good
	Music program	Good
	Athletic program	Superb
Quality of neighborhood	High school quality	Very good
	Crime	Some
	Traffic	Quiet street
	Playgrounds	Wonderful
	Athletic facilities	Excellent
Quality of house	Kids close by	Some
	Neighbors	New friends
	Bedrooms	4, 2 small
	Bathrooms	Great
	Kitchen	A pleasure
	Family room	Adequate
Yard	Required maintenance	Good shape
	General aesthetics	Pleasant
	Size	3,000 sq. ft.
Cost	Garden (trees, shrubs)	Fine shape
	Suitability for dog	OK
	Suitability for kids	Perfect
	Asking price	\$225,000
Real estate taxes	\$3,500/year	
Other concerns	Low maintenance Growth in equity	

### Alternatives

	Eaton	School	Wade	West Boulevard
30 min. heavy	20 min.	15 min.	30 min.	
20 min. moderate	25 min. light	20 min.	15 min.	
Bus 10 min.	Walk, 2 blocks	Walk, 5 min.	Walk, 4 blocks	
Needs car, 3 min.	Easy walk	Easy walk	Long walk	
65	55	95	70	
Passable	Poor	Very good	Good	
Fine	None	Excellent	Just OK	
Poor	Very good	Good	Good	
Good	Good	First-rate	Good	
Moderate	Low	Little	Mod. to high	
Mod. rush hours	Moderate	Mod. rush hours	Mod. to high	
So-so	Adequate	Pretty good	Poor	
Adequate	Fine	Adequate	Good	
Very few	Lots	Lots	Just a few	
Bothersome	Congenial	Compatible	Seem nice	
4 small	3 small	3 large	3 average	
Adequate	Not good	Good	A problem	
Good	Good	Nice	Best part of house	
Pitiful	Fine	Large, fireplace	Small	
Fine shape	Poor shape	Needs work	Mod.	
Just OK	Poor	Pleasant	OK to good	
5,000 sq. ft.	1,500 sq. ft.	4,000 sq. ft.	2,000 sq. ft.	
Pedestrian	Awful	Needs work	Needs attention	
Great	Not good	Good	Poor	
Good	So-so	Fine	Poor to OK	
\$240,000	\$175,000	\$195,000	\$180,000	
\$3,200/year	\$2,200/year	\$2,500/year	\$2,300/year	
—	High maintenance with renovation	Mod. maintenance	—	

of the consequences for their objectives. While the consequences table doesn't reveal an obvious choice, it does allow the Mathers to drop one alternative (Eaton Street) from further consideration, as it is clearly inferior to at least one other house and therefore a poor choice.

At this stage, the Mathers might benefit from the following suggestions:

- Identify or construct scales for some objectives. Scales would both clarify the meaning of some objectives and facilitate comparisons among the remaining alternatives. Take "Crime," for example. Are the Mathers concerned with violent crime against people, with property crime, with vandalism, or with all of the above? Are data available on the annual incidents of each type of crime for each neighborhood? Can the Mathers create a crime index for each neighborhood? If crime is a major concern, it would be worth taking this step. At the very least, discussing how they would measure crime would clarify their concerns, even if they don't actually create a crime index.
- Check all consequences for accuracy and stability. John, a third grader, may now have a 5-minute walk to his primary school, but if the walk to the local middle school, which John will attend in three years, is 20 minutes, using 5 minutes as a consequence description would be inaccurate. The Mathers may need to think a little bit further into the future.
- Check all consequences for completeness. The consequences describing school quality for John's middle school are missing; they should be defined for all of the prospective houses.
- Check the precision of all consequences. The description "Needs work" for the objective "Garden (trees, shrubs)" for example, leaves a lot of room for interpretation. Better to include an estimate of the time or dollar cost for the work.
- Systematically compare the remaining alternatives, two at a time. List the pros and cons of each relative to the others. Easier than comparing four alternatives all at once, pair-at-a-time comparisons often identify an alternative that can be dropped and sometimes bring to light new information that points to a single best alternative. At the least, they would help further clarify the relative strengths and weaknesses of the remaining alternatives.

## Tradeoffs

AT THIS POINT IN THE PROCESS, having compared the consequences of your alternatives, you will likely have eliminated some poor choices. Those that remain will seem to nearly balance each other: *alternative A will be better than alternative B on some objectives, but worse on others.* Important decisions usually have conflicting objectives—you can't have your cake and eat it, too—and therefore you have to make tradeoffs. You need to give up something on one objective to achieve more in terms of another.

In the early 1980s, for example, the United States enacted a national speed limit of 55 miles per hour to reduce gasoline consumption. The limit also led to a reduction in highway fatalities. Ten years later, however, a fresh debate broke out over the limit. Proponents pointed to the thousands of lives that had been saved. Opponents argued that with the oil crisis long past and today's cars more fuel-efficient, the national limit should be raised to allow drivers to get to their destinations more quickly. Some participants in the debate held that states should be free to set their own speed limits.