SMART CHOICES

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.

CHAPTER 6

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.

Each of these viewpoints stresses a different objective: lives saved, convenience, and states' rights. Finding an appropriate balance among them is difficult, but not trying to balance them misses the point. Suppose we all agreed that the 55 mile-per-hour limit was justified by the number of lives saved. Inevitably, a proposal for a 45 mile-per-hour limit, clearly preferable given an exclusive focus on saving lives, would quickly follow. Why not 35 miles per hour, then, or 20? Each reduction in the speed limit would, after all, save many additional lives. At some point, however, other objectives would come into play. The vast majority of people would not accept a speed limit of 20 miles per hour. They would, in fact, object strenuously, using such reasons as convenience or states' rights, or both. There's the rub. *Decisions with multiple objectives cannot be resolved by focusing on any one objective.*

When you do have only one objective, your decision is straightforward. If you wanted to fly from New York to San Francisco as cheaply as possible, for example, you'd simply find the airline offering the lowest fare and buy a ticket. But having only one objective is a rare luxury. Usually, you're pursuing many different objectives simultaneously. Yes, you want a low fare, but you also want a convenient departure time, a direct flight, and an airline with an outstanding safety record. And you'd also like to have an aisle seat and earn frequent flyer miles in one of your existing accounts. Now the decision is considerably more complicated. Because you can't simultaneously fulfill all your objectives, you're forced to seek a balance among them. You have to make tradeoffs.

Making wise tradeoffs is one of the most important and most difficult challenges in decision making. The more alternatives you're considering and the more objectives you're pursuing, the more tradeoffs you'll need to make. The sheer volume of tradeoffs, though, isn't what makes decision making so hard. It's the fact that each objective has its own basis of comparison. For one objective you may compare the alternatives using precise numbers or percentages—34 percent, 38 percent, 53 percent. For another, you may need to make broad relational judgments—high, low, medium. For another, you may use purely descriptive terms—yellow, orange, blue. You're not just trading off apples and oranges; you're trading off apples and oranges and elephants.

How do you make tradeoffs among such widely disparate things? That's what we're going to show you in this chapter.

Find and Eliminate Dominated Alternatives

The first step is to see if you can rule out some of your remaining alternatives before having to make tough tradeoffs. The fewer the alternatives, the fewer the tradeoffs you'll need to make and the easier your decision will be. To identify alternatives that can be eliminated, follow this simple rule: if alternative *A* is better than alternative *B* on some objectives and no worse than *B* on all other objectives, *B* can be eliminated from consideration. In such cases, *B* is said to be *dominated* by *A*—it has disadvantages without any advantages.

Say you need a break and want to take a relaxing weekend getaway. You have five places in mind, and you have three objectives: low cost, good weather, and short travel time. In looking at your options, you notice that alternative *C* costs more, has worse weather, and requires the same travel time as alternative *D*. Alternative *C* is dominated and can therefore be eliminated.

You need not be rigid in thinking about dominance. In making further comparisons among your options, you may find, for example, that alternative *E* also has higher costs and worse weather than alternative *D* but has a slight advantage in travel time—it would take a half hour less to get to *E*. You may easily conclude that the relatively small time advantage doesn't outweigh the weather and cost disadvantages. For practical purposes, alternative *E* is dominated by *D*—we call this "practical dominance"—so you can eliminate alternative *E* as well. By looking for dominance, you've just made your decision much simpler—you have to choose among only three alternatives, not five.

Consequences tables, which we discussed in the last chapter, can be great aids in identifying dominated alternatives because they provide a framework that facilitates comparisons. But if there are many alternatives and objectives, there can be so much information in the table that it becomes hard to spot dominance. Glance back at Vincent Sahid's consequences table on page 69, and you'll see what we mean. To make it easier to uncover dominance, you should create a second table in which the descriptions of consequences are replaced with simple rankings.

Working row by row—that is, objective by objective—you determine the consequence that best fulfills the objective and replace it with the number 1; you then find the second best consequence and replace it with the number 2; and you continue in this way until you've ranked the consequences of all the alternatives. When Vincent looks at the "Vacation" objective in his table, for example, he sees that 15 days ranks first, 14 days ranks second, the two 12 days tie for third, and 10 days ranks fifth. When he moves from the quantitatively measured objectives to the qualitatively measured ones, he finds that more thought is required, as the rankings need to be based on subjective judgments rather than objective comparisons. In assessing the benefits packages, for example, he decides that dental coverage is more important to him than a retirement plan, and he makes his rankings on that basis. Vincent's ranking table is shown below.

Dominance is much easier to see when you're looking at simple rankings. Vincent sees that job *E* is clearly dominated by job *B*—it's worse on four objectives and equivalent on two. Comparing job *A* and job *D*, he sees that job *A* is better on three objectives and worse on one (vacation), with two ties. When an alternative has only one advantage compared to another, as with job *D*, it is a candidate for elimination due to practical dominance. In this case, Vincent easily concludes that the one-day vacation advantage of job *D* is far outweighed by its disadvantages in salary, busi-

Ranking Alternatives on Each Objective for Vincent Sahid's Job Decision

	Alternatives				
Objectives	*Job A*	*Job B*	*Job C*	*Job D*	*Job E*
Monthly salary	3	1	5	4	2
Flexibility of work schedule	2 (tie)	4	1	2 (tie)	5
Business skills development	4	1	3	5	2
Vacation (annual days)	2	3 (tie)	5	1	3 (tie)
Benefits	1	2 (tie)	5	4	2 (tie)
Enjoyment	1 (tie)	3 (tie)	3 (tie)	1 (tie)	5

ness skills development, and benefits. Hence, job *D* is practically dominated by job *A* and can also be eliminated.

Using a ranking table to eliminate dominated alternatives can save you a lot of effort. Sometimes, in fact, it can lead directly to the final decision—if all your alternatives but one are dominated, then the remaining alternative is your best choice. The process of determining dominance also protects you from mistakenly selecting inferior alternatives, because they are removed from contention.

Make Tradeoffs Using Even Swaps

If you still have more than one alternative in contention, you'll need to make tradeoffs. At this point, it will be useful to take a short trip back in time to see what the American sage Ben Franklin had to say about decision tradeoffs. More than 200 years ago, Franklin's friend Joseph Priestley, a noted scientist, faced a tough decision, and he wrote to Franklin to ask which of two alternatives he should choose. Franklin recognized that the choice would depend on Priestley's objectives and on his evaluation of the two alternatives with respect to those objectives. Rather than suggest a specific choice, therefore, Franklin outlined a reasonable *process* to help Priestley choose. Here is Franklin's letter, sent from London on September 19, 1772.

Dear Sir,

In the affair of so much importance to you, wherein you ask my advice, I cannot, for want of sufficient premises advise you what to determine, but if you please I will tell you how.

When those difficult cases occur, they are difficult, chiefly because while we have them under consideration, all the reasons pro and con are not present to the mind at the same time; but sometimes some set present themselves, and at other times another, the first being out of sight. Hence the various purposes or inclinations that alternately prevail, and the uncertainty that perplexes us.

To get over this, my way is to divide half a sheet of paper by a line into two columns; writing over the one pro, and over the other con. Then during three or four days consideration, I put down under the different heads short hints of the different motives, that at different times occur to me, for or against the measure.

When I have thus got them all together in one view, I endeavor to estimate their respective weights; and where I find two, one on each side, that seem equal, I strike them both out. If I find a reason pro equal to two reasons con, I strike out the three. If I judge some two reasons con, equal to some three reasons pro, I strike out the five; and thus proceeding I find at length where the balance lies; and if, after a day or two of further consideration, nothing new that is of importance occurs on either side, I come to a determination accordingly.

And, though the weight of reasons cannot be taken with the precision of algebraic quantities, yet when each is thus considered, separately and comparatively, and the whole lies before me, I think I can judge better, and am less liable to make a rash step, and in fact I have found great advantage from this kind of equation, in what may be called moral or prudential algebra.

Wishing sincerely that you may determine for the best, I am ever, my dear friend, yours most affectionately.

B. Franklin

Ben Franklin proposed a wonderful way to simplify a complex problem. Each time he eliminated an item from his list of pros

and cons, he replaced his original problem with an equivalent but simpler one. Ultimately, by honing his list, he revealed a clear choice. Although Franklin did not explicitly use a list of objectives, his caution in advising his friend "for want of sufficient premises," together with his focused approach to his lists of pros and cons, shows that he relied on them implicitly.

A consequences table can be used to extend Franklin's ideas about a "moral or prudential algebra" to a choice among any number of alternatives, not just two. In the following pages, we'll show how to make tough tradeoffs and use them to replace your complex decision problem with a simpler one, just as Franklin did. We call this technique the *even swap method.* First we'll describe how the even swap method works, illustrating the process using a simple example with only two alternatives and two objectives, and later we'll apply it to a more complex situation with many objectives and alternatives.

The Essence of the Even Swap Method

What is the even swap method? To explain the concept, we need to first state an obvious but fundamental tenet of decision making: if all alternatives are rated equally for a given objective—for example, all cost the same—then you can ignore that objective in choosing among those alternatives. If all airlines charge the same fare for the New York–San Francisco flight, then cost doesn't matter. Your decision will hinge only on the remaining objectives.

The even swap method provides a way to adjust the consequences of different alternatives in order to render them equivalent in terms of a given objective. Thus this objective becomes

irrelevant. As its name implies, an even swap increases the value of an alternative in terms of one objective while decreasing its value *by an equivalent amount* in terms of another objective. In essence, the even swap method is a form of bartering—it forces you to think about the value of one objective in terms of another. If, for example, American Airlines charged $100 more for a New York–San Francisco flight than did Continental, you might swap a $100 reduction in the American fare for 2,000 fewer American frequent flyer miles. In other words, you'd "pay" 2,000 frequent flyer miles for the fare cut. Now, American would score the same as Continental on the cost objective, so cost would have no bearing in deciding between them. Whereas the assessment of dominance enables you to eliminate alternatives, the even swap method allows you to eliminate objectives. As more objectives are eliminated, additional alternatives can be eliminated because of dominance, and the decision becomes easier.

Application of the Even Swap Method

Let's apply the even swap method to a fairly simple problem to illustrate how it works. Imagine you're running a Brazilian cola company, and a number of other companies have expressed interest in buying franchises to bottle and sell your product. Your company currently has a 20 percent share of its market, and it earned $20 million in the fiscal year that's just ended. You have two key objectives for the coming year: increase profits and expand market share. You estimate that franchising would reduce your profits to $10 million due to startup costs, but it would increase your share to 26 percent. If you don't franchise, your prof-

its would rise to $25 million, but your share would increase to only 21 percent. You put all of this down in a consequences table (see below).

Which is the smart choice? As the table indicates, the decision boils down to whether the additional $15 million profit from not franchising is worth more or less than the additional 5 percent market share from franchising. To resolve this question, you can apply the even swap method following a straightforward process.

First, determine the change necessary to cancel out an objective. If you could cancel out the $15 million profit advantage of not franchising, the decision would depend only on market share.

Second, assess what change in another objective would compensate for the needed change. You must determine what increase in market share would compensate for the profit decrease of $15 million. After a careful analysis of the long-term benefits of increased share, you settle on a 3 percent increase.

Third, make the even swap. In the consequences table, you reduce the profit of not franchising by $15 million, while increasing its market share by 3 percent, to 24 percent. The table below

Consequences Table for Cola Company's Possible Marketing Strategies

	Alternatives	
Objectives	*Franchising*	*Not Franchising*
Profit (in millions)	$10	$25
Market share	26%	21%

shows the restated consequences (a $10 million profit and a 24 percent market share) that are equivalent in value to the original consequences (a $25 million profit and a 21 percent market share).

Fourth, cancel out the now-irrelevant objective. Now that the profits for the two alternatives are equivalent, profit can be eliminated as a consideration in the decision. It all boils down to market share.

Finally, eliminate the dominated alternative. The new decision, while equivalent to the original one, is now easy. The franchising alternative, better on market share, is the obvious choice.

For the cola company, only one even swap revealed the superior alternative. Usually it takes more—often many more. The beauty of the even swap approach is that, no matter how many alternatives and objectives you're weighing, you can methodically reduce the number of objectives you need to consider until a clear choice emerges. The method, in other words, is iterative. You keep switching between making even swaps (to eliminate objectives) and identifying dominance (to eliminate alternatives) until only one alternative remains.

Cola Company's Even Swap

	Alternatives	
Objectives	*Franchising*	*Not Franchising*
Profit (in millions)	$10	~~$25~~ $10
Market share	26%	~~21%~~ 24%

Simplify a Complex Decision with Even Swaps

Now that we've discussed each step of the process, let's apply the whole thing to a more complex problem. Alan Miller is a computer scientist who started a technical consulting practice three years ago. For the first year he worked out of his home, but with his business growing he decided to sign a two-year lease on some space in the Pierpoint Office Park. Now that lease is about to expire. He needs to decide whether to renew it or move to a new location.

After considerable thought about his business and its prospects, Alan defines five fundamental objectives for an office: short commuting time, good access to clients, good office services (clerical assistance, copy machines, faxes, mail service), sufficient space, and low cost. He surveys more than a dozen possible locations and, dismissing those that clearly fall short of his needs, settles on five viable alternatives: Parkway, Lombard, Baranov, Montana, and his current building, Pierpoint.

He then develops a consequences table (page 91), laying out the consequences of each alternative for each objective and using a different measurement scale for each objective. He describes commuting time as the average time in minutes needed to travel to work during rush hour. To measure access to clients, he determines the percentage of his clients whose business is within an hour's lunchtime drive of the office. He uses a simple three-point scale to describe the office services provided: *A* means full service, including copy and fax machines, telephone answering, and for-fee secretarial assistance; *B* indicates fax machines and telephone answering only; and *C* means that no services are available. Office size is measured in square feet, and cost is measured by monthly rent.

Consequences Table for Alan's Office Selection

Objectives	Alternatives				
	Parkway	*Lombard*	*Baranov*	*Montana*	*Pierpoint*
Alan's commute (min.)	45	25	20	25	30
Client access (%)	50	80	70	85	75
Office services (constructed scale)	A	B	C	A	C
Office size (sq. ft.)	800	700	500	950	700
Monthly cost (dollars)	1,850	1,700	1,500	1,900	1,750

To simplify his decision, Alan immediately seeks to eliminate some alternatives by using dominance or practical dominance. To make this easier, he uses the descriptions in the consequences table to create a ranking table (page 92).

Scanning the columns, he quickly sees that the Lombard office dominates the current Pierpoint site, outranking it on four objectives and tying it on the fifth (office size). He eliminates Pierpoint from further consideration. He also sees that Montana almost dominates Parkway, falling behind in cost only. Can he eliminate Parkway, too? He flips back to his original consequences table and notices that, for the small cost disadvantage of Montana—only $50 per month—he would gain an additional 150 square feet, a much shorter commute, and much better client access. He eliminates Parkway using practical dominance.

Alan has reduced his choice to three alternatives—Lombard,

Ranking Alternatives on Each Objective for Alan's Office Selection

Objectives	Alternatives				
	Parkway	*Lombard*	*Baranov*	*Montana*	*Pierpoint*
Alan's commute (min.)	5	2 (tie)	1	2 (tie)	4
Client access (%)	5	2	4	1	3
Office services (constructed scale)	1 (tie)	3	4 (tie)	1 (tie)	4 (tie)
Office size (sq. ft.)	2	3 (tie)	5	1	3 (tie)
Monthly cost (dollars)	4	2	1	5	3

Baranov, and Montana—none of which dominates any other. He redraws his consequences table (see "Redrawn Table," page 93).

To further clarify his choice, Alan needs to make a series of even swaps. In scanning the table, he sees the similarity among the commuting times for the three remaining alternatives. If the Baranov's 20-minute commute were increased to 25 minutes using an even swap, all three alternatives would have an equivalent commute time, and that objective could then be dropped from further consideration. Alan decides that this 5-minute increase in Baranov's commute time can be compensated for by an 8 percent increase in Baranov's client access, from 70 to 78 percent. He makes the swap, rendering commute time irrelevant in his deliberations (see "Eliminate Commute" table, page 93). Alan then checks this table for dominated alternatives but finds none.

Making a Series of Even Swaps to Select the Right Office

Redrawn Table

Objectives	Alternatives		
	Lombard	*Baranov*	*Montana*
Alan's commute (min.)	25	20	25
Client access (%)	80	70	85
Office services (constructed scale)	B	C	A
Office size (sq. ft.)	700	500	950
Monthly cost (dollars)	1,700	1,500	1,900

Eliminate Commute

Objectives	Alternatives		
	Lombard	*Baranov*	*Montana*
~~Alan's commute (min.)~~	~~25~~	~~20~~ ~~25~~	~~25~~
Client access (%)	80	~~70~~ 78	85
Office services (constructed scale)	B	C	A
Office size (sq. ft.)	700	500	950
Monthly cost (dollars)	1,700	1,500	1,900

Alan next eliminates the office services objective by making two even swaps with monthly cost. Using the Lombard service level (*B*) as a standard, he swaps an increase in service level from *C* to *B* for Baranov for a $250 increase in monthly costs. He also swaps a decrease in service level from *A* to *B* for Montana for a savings of $100 per month (see "Eliminate Office Services and Baranov" table, page 94).

Each time Alan makes an even swap, he changes the way the alternatives match up. With the office services objective eliminated, he finds that the Baranov alternative is now dominated by the

Making a Series of Even Swaps to Select the Right Office (continued)

	Eliminate Office Services and Baranov			*Eliminate Office Size; Select Montana*	
	Alternatives			Alternatives	
Objectives	*Lombard*	*Baranov*	*Montana*	*Lombard*	*Montana*
Alan's commute (min.)	~~25~~	~~25~~	~~25~~	~~25~~	~~25~~
Client access (%)	80	78	85	80	85
Office services (constructed scale)	~~B~~	~~C~~ ~~B~~	~~A~~ ~~B~~	~~B~~	~~B~~
Office size (sq. ft.)	700	500	950	~~700~~ ~~950~~	~~950~~
Monthly cost (dollars)	1,700	~~1,500~~ 1,750	~~1,900~~ 1,800	~~1,700~~ 1,950	1,800

Lombard alternative and can be eliminated. This highlights an important process consideration. In making even swaps, you should always seek to create dominance where it didn't exist before, thus enabling you to eliminate an alternative. In your decision process, you will want to keep switching back and forth between examining your columns (alternatives) and your rows (objectives), between assessing dominance and making even swaps.

With Baranov out of the picture, only Lombard and Montana remain. They have equivalent scores in commuting time and services, leaving only three objectives to consider. Alan next makes

an even swap between office size and monthly cost. Deciding that the 700-square-foot Lombard office will be cramped, he swaps an additional 250 square feet for a substantial cost increase—$250 per month. This swap cancels the office-size objective, revealing Montana to be the clearly preferable alternative, with advantages in both of the remaining objectives, cost and client access. Montana now dominates Lombard (see "Eliminate Office Size; Select Montana" table, page 94).

Alan signs the lease for space at Montana, confident that he has thought through the decision carefully, considered every alternative and objective, and made the smart choice.

Practical Advice for Making Even Swaps

Once you get the hang of it, the mechanical part of the even swap method becomes easy—almost a game. Determining the relative value of different consequences—the essence of any tradeoff process—is the hard part. By design, the even swap method allows you to concentrate on the value determinations one at a time, giving each careful thought. While there's no easy recipe for deciding how much of one consequence to swap for some amount of another (every swap requires subjective judgment), you can help ensure that your tradeoffs are sound by keeping the following suggestions in mind.

Make the easier swaps first. Determining the value of some swaps will be more difficult for you than determining the value of others. In choosing among airlines, for example, you may be able to calculate, in fairly precise terms, the monetary value of a cer-

tain number of frequent flyer miles. After all, you know how many miles it would take to earn a free flight and what a flight would cost. Swapping between fares and miles will therefore be a straightforward process. On the other hand, swapping between airline safety records and flight departure times will be much less clear-cut. In this case, you should make the fare-mile swap—the easier swap—first. Often, you will be able to reach a decision (or at least eliminate a number of alternatives) by just making the easier swaps, saving you from having to wrestle with the harder ones at all.

Concentrate on the amount of the swap, not on the perceived importance of the objective. It doesn't make sense to say that one objective is more important than another without considering the degree of variation among the consequences for the alternatives under consideration. Is salary more important than vacation? It depends. If the salaries of all the alternative jobs are similar but their vacation times vary widely, then the vacation objective may be more important than the salary objective.

Concentrating on an objective's perceived importance can get in the way of making wise tradeoffs. Consider the debate that might occur in a town trying to decide whether public library hours should be cut to save money. The library advocate declares, "Preserving current library hours is much more important than cutting costs!" The fiscal watchdog counters, "No, we absolutely have to cut our budget deficit! Saving money is more important." Were the two sides to focus on the actual amounts of time and money in question, they might find it easy to reach agreement. If cutting branch hours by just two hours one morning a week saves $250,000 annually, the library advocate might agree that the

harm to the library would be small compared to the amount saved, especially considering other possible uses for the money. If, instead, the savings were a mere $25,000 annually, even the fiscal watchdog might agree that harm to the library wouldn't be worth the savings. The point is this: when you make even swaps, concentrate not on the importance of the objectives but on the importance of the amounts in question.

Value an incremental change based on what you start with. When you swap a piece of a larger whole—for example, a portion of an office's overall square footage—you need to think of its value in terms of the whole. For example, adding 300 square feet to a 700-square-foot office may make the difference between being cramped and being comfortable, whereas adding 300 square feet to a spacious 1,000-square-foot-office may not be nearly as valuable to you. The value of the 300 square feet, like the value of anything being swapped, is relative to what you start with. It's not enough to look just at the size of the slice; you also need to look at the size of the pie.

Make consistent swaps. Although the value of what you swap is relative, the swaps themselves should be logically consistent. If you would swap *A* for *B* and *B* for *C*, you should be willing to swap *A* for *C*. Let's say you manage an environmental protection program charged with preserving wilderness quality and expanding salmon spawning habitats for as low a cost as possible. In a cost-benefit analysis, you might calculate that both one square mile of wilderness and two miles of river spawning habitat have values equivalent to $400,000. In making your swaps, you should therefore equate one square mile of wilderness with two miles of river

spawning habitat. From time to time, check your swaps for consistency.

Seek out information to make informed swaps. Swaps among consequences require judgments, but these judgments can be buttressed by facts and analysis. In making your environmental tradeoffs, for example, you might ask a fish biologist to provide information about how many salmon would use a mile of newly created spawning habitat, how many eggs might eventually hatch, how many fish would survive to swim downstream, and how many would return to spawn in the river years later. Whether a mile of spawning habitat would result in an increase in the annual salmon run of 20 or 2,000 adult salmon will likely make a big difference in the relative value you establish for that habitat.

For some decisions, you yourself will be the source of much of the relevant information. If you are trading off vacation time and salary in choosing among job offers, only you know how you would spend a two-week versus a four-week vacation and the value of the difference to you. You should be as rigorous in thinking through your own judgments as you are in assessing objective data from outside sources. No matter how subjective a tradeoff, you never want to be guided by whim—think carefully about the value of each consequence *to you.*

Practice makes perfect. Like any new approach to an old problem, the even swap method will take some getting used to. The first few times you make swaps, you may struggle with the overall process as well as with each assessment of relative value. Fortunately, the process itself is relatively simple, and it always works the same way. Once you get the hang of it, you'll never have to

think about it again. Deciding on appropriate swaps, on the other hand, will never be easy—each swap will require careful judgment. As you gain experience, though, you'll also gain understanding. You'll become more and more skilled at zeroing in on and expressing the real sources of value. You'll know what's important and what's not. Perhaps the greatest benefit of the even swap method is that it forces you to think through the value of every tradeoff in a rational, measured way. In the end, that's the secret of making smart choices.

APPLICATION

To Renovate or Move?

Still unsure of their decision after reviewing their consequences table, Drew and Darlene decide to try to rank the alternatives by objective. For each of their main objectives, they compare the houses in terms of the relevant subobjectives. Regarding house quality, they easily determine a ranking that places Amherst first, followed by Wade, Eaton, West Boulevard, and finally School Street. Although based on the information about house quality pulled together by Darlene, the ranking derives not from a formula but from judgments the couple made. Satisfied and encouraged by their first stab at rankings, they move on to the other objectives, drawing up the table on page 100 after much further thought and discussion.

Darlene begins drawing some conclusions. "These rankings make some things pretty clear. For instance, they confirm our earlier conclusion that Eaton should be eliminated—Wade is better on every main objective." It doesn't matter that Eaton is better than Wade on some subobjectives, as this is accounted for in the ranking on the main objectives.

Drew adds further assessments. "I think that West Boulevard could

go, too. Wade is better on five main objectives and inferior by only a small difference in cost. In addition, look at West Boulevard and School Street. They are even on location: School Street is in a better neighborhood, but its schools are worse. West Boulevard beats School Street on house quality and yard, but School Street is slightly less expensive. All in all, School Street seems about equal to West Boulevard, so if West Boulevard goes, School Street should, too. Do you agree?"

"Yes, I do! So we're down to the crux: do we want to try for Wade or Amherst?"

"Daddy, I think we should move to Wade Street."

"Why do you think so?"

"Well, the scores on your table add up to 12 points for Wade and 15 for Amherst, and the fewer the points the better."

Drew and Darlene mull this over. Is it right to just add the ranking

Ranking the Alternatives for Each Main Objective for the Mathers' New House

Objectives	Alternatives				
	Amherst	*Eaton*	*School*	*Wade*	*West Boulevard*
Good location	5	4	2 (tie)	1	2 (tie)
Quality of school	2	4	5	1	3
Quality of neighborhood	1	4	2	3	5
Quality of house	1	3	5	2	4
Yard	1	3	5	2	4
Cost	5	4	1	3	2

scores? No, they finally decide; both Wade and Amherst are better on three objectives. The rankings capture neither the degree of superiority of one over the other nor the nature of the differences, and both are important for their decision.

To better compare the pros and cons of Wade and Amherst, the Mathers return to the consequences table (page 76). After a while, Drew says, "I've been agonizing over this table, and it's hard to see which is better. One thing I realize now is that I don't really understand the cost implications of either alternative very well. Let me work on that for an hour or so."

Drew goes to work on the monthly costs of ownership. In other words, he digs deeper into the cost portion of the consequences table. He considers mortgage, upkeep, insurance, and real estate taxes. He reduces the mortgage interest and real estate taxes figures by the amount the Mathers would save in deductions on their income tax. He also estimates the equity buildup after 10 years resulting from the appreciation of each house and the paying down of the mortgages. After completing his financial analysis, he summarizes his conclusions to Darlene. "It all boils down to Amherst's being about $150 per month more expensive than Wade. However, that added expense per month buys us something financially. We'd have more equity building up at Amherst than at Wade—about $24,000 more in 10 years, I estimate. That has to be taken into account. These numbers surprise me. I thought that Amherst would be much more expensive than Wade, but it really isn't. With Amherst, we'd have a sort of forced savings plan."

"So are you tilting toward Amherst?"

"No, no, no. I'm just saying that as far as cost is concerned, it's not much of a difference. We have to look at all the other factors, too."

Darlene says, "I've been trying to think systematically about this. It seems to me that the choice boils down to this: Wade is way better on location, somewhat better on cost, slightly better on school quality, a

little worse on neighborhood quality, a little worse on house quality, and not quite as good on yard quality."

"That's still apples and oranges—evaluations across categories. How can we compare less commuting time with better house quality?"

"Well, for me the answer seems clear now. And it was John who helped me decide. Do you want to know my reasoning, or do you want to struggle more yourself? I don't want to bias you."

"I'm all ears. How did John help? I suspect he prefers Wade because there are loads of kids on the block."

"When I considered the longer commuting time for Amherst, I had in mind your frustration and the time you'd waste stuck in traffic. But John had a different twist. He said, 'If Daddy has to travel more, he won't have time to play with me before dinner.' And this got me thinking about the real downside of a longer commute. As it is, you only have about two hours between the time you get home and the time John goes to bed. A longer commute will just cut into the time you have to spend with John and the baby. That's serious! So . . . I think the advantages in location for Wade outweigh its other slight deficiencies."

"Boy, am I glad you think so. I didn't want to make too much of more travel time, because it falls mostly on my shoulders, but I agree with John. I would miss not having time to play with him after work."

"And there's another reason I'd like you home earlier. You're sweeter when you're not frustrated with traffic."

So the Mathers call Anne and ask her to put in a bid of $190,000 for the Wade Street house. It is accepted the next day.

Lessons from the Application

The Mathers organized their information wisely to help them evaluate their alternatives. The ranking on each main objective allowed them to see that the Eaton house was dominated and that West Boulevard and School Street were practically dominated. It then boiled down to a decision between Amherst and Wade. As is often the case, when it gets down to decision time, there was an aspect of consequences—in this case, cost—that needed further exploration before they were comfortable making a decision.

What would we have suggested the Mathers do to better appraise the suitability of the remaining two houses?

- In specifying their original objectives and subobjectives, the Mathers did not ask "Why?" often enough. Why, for example, did they want to reduce commute time? If they had, perhaps they would have identified earlier the objectives of increasing Drew's play time with John and reducing his grumpiness.
- The Mathers could have used the even swap method to compare the relative pros and cons of the final two contending houses. This would help identify the Wade house as the smart choice and clarify the basis for this choice.
- When only Amherst and Wade remained as contenders, the Mathers could have listed the pros and cons of one house versus the other and applied Benjamin Franklin's method for balancing the pros and cons to help make a choice.

After thinking very carefully about which house to try to buy, the Mathers spent too little time deciding how much to offer. Deciding on a bid is a separate decision from which house to purchase, and it's a decision worthy of careful thought. Maybe an offer of $172,000 would have been accepted, saving the Mathers $18,000. The decision of what to offer comes with significant uncertainties: Are there other bids from other potential buyers? What might they be? What offer will the seller accept? How might the seller counter? In the next chapter, we'll discuss how to systematically address such uncertainties to help make a smart choice.