Chapter **11**

Motivation and Cognitive Processes

It ain't the things we don't know that make trouble, it's the things we know that ain't so.

—WILL ROGERS

Reasoning does not happen *to us; we* do *it.*

—C. S. LEWIS

Consider again how we calculate expected utilities. We multiply the utility of an outcome by its subjective probability. The first of these is set by our motives—what we like or want. The second is set by cognition—what we know or believe. Thus, the theory of decision-making makes knowledge or belief the partner of motivation.

This chapter will examine that partnership. It has four parts. First, we will look at the role of knowledge or belief in judgment and action, and how it interacts with motivational factors.

Second, we will examine some complications in the way our beliefs are formed—in the way our knowing and believing processes work. We consider these complications for three reasons: (1) Because they affect our beliefs, they affect the decisions we make. (2) They are solutions to a problem of *allocating* cognitive time and effort, and they shed some light on the pigeon/poker paradox discussed in Chapter 10. (3) We will see that cognitive and motivational influences on action are not easy to disentangle. One may easily be mistaken for the other.

In the third part of the chapter we will look at the evidence that cognitive activity is affected by a specific motive—a motive toward coherence,

clarity, and simplicity in our system of knowledge and beliefs. We will relate this idea in turn to the theory of *cognitive dissonance*—how behavior acts back to affect beliefs and values.

Finally, we will ask how other motives affect cognitive operations. Do motives *determine* what we believe and perceive? For example, do we believe what we want to believe? Do we remember what we want to remember? Are cognitive operations partners of motivation, or servants?

BELIEFS, MOTIVES, AND ACTION

Both utilities and subjective probabilities enter into a decision equation. As a result, variations in either one can affect a decision in the same way, and there may be trade-off relations between them. Think again about flirting in Titipu. How likely are we to break the law? Obviously it depends on the value of doing so (how much we want to flirt with this person) and on the cost (how severe is the penalty if we're caught). But it also depends on how *likely* we think we are to get caught. If the environment is crawling with police equipped with long-distance microphones, even a light fine might deter us. If we're sure there are no police for miles around, even the death penalty might not do so. A decrease in probability, in other words, has the same effect on our decision as a decrease in cost. Even a high cost, but with low probability, can be a low *expected* cost.

Another, more serious example shows how easily cognitive and motivational influences can be confused with each other. Consider the crime we call *date rape.* A woman may be forced to have sexual intercourse, against her will, with a man she knows and even likes—whom she is dating perhaps, hence the term.

In such cases, the man's use of force often reflects his *beliefs* about what is appropriate, permitted, or even admirable. There is the image of "sweeping a woman off her feet" as something macho, daring, and masculine. And there is the myth that when a woman says no she means yes.

This way of looking at the problem does *not* make it any less serious, but it does suggest different ways of dealing with it. Since the act is sexual, we find it natural to look for its cause in an excess of sexual motivation (see the *representativeness heuristic,* p. 381). If that sounds naive, listen: In 1977, Judge Archie Simpson acquitted a fifteen-year-old male who had raped a high-school female. The judge thought her dress had been so short that she had excited the boy's passions to irresistible levels!

But the major cause of this serious crime is not uncontrollable sexual motivation. It is the popular myth—the false *belief*—that women do not mean it when they say no. To reduce the incidence of date rape, we must change men's beliefs—not their motives.

THE BASIS OF BELIEFS

If what we believe affects what we do, then to understand action we must consider the sources of beliefs. Where do they come from?

Well, we can see where they *ought to* come from if we are purely rational. We want beliefs to coincide with reality; so we ought to base them on a careful search and appraisal of the best data we can obtain. That would be the *normatively correct* way to proceed. Let us see what the process might look like.

A Case Study: Attribution Theory

An important case of belief formation is our assignment of *causes* to events—especially the actions of other people. When we ask, "Why did he or she do that?" we are trying to assign, or **attribute,** a cause to the action. Then we adopt the *belief* that the action was caused by such and such.

The process is very important, for what we do about a person's action will depend on what we believe its cause to be. Suppose we meet someone who greets us in a surly, snappish way. If we attribute that action to some *internal* cause—say, a hostile personality—we might snap back, and we would probably avoid further contact with that person. But if we find that the action had an *external,* situational cause—say, that the person has just had a grant application turned down—we would probably react with sympathy rather than resentment, and not avoid him afterward.

The Intuitive Scientist

Attribution theory is a theory about how we form such beliefs about causation. Harold Kelley* followed the pioneering work of Fritz Heider[1] to lay the groundwork for attribution theory. He assumed that when we see an action performed, we seek its causes in somewhat the way a scientist might do it. We ask: What is it that is present when the action occurs, and absent when it is absent? And we test various possibilities against the evidence.

Attributions and Data

Consider a hockey player who bumps an opponent in the course of a game. If the bumping occurred while play was in progress, not much is revealed about the bumper; he was behaving according to the nature of the game. But if the bump occurred during a time out, the act reveals something about the person who did it, suggesting a grudge or a nasty disposition.

We, the observers, are here performing an intuitive scientific analysis of the bumping episode, asking: Why did he do that? In the one case we can say: He bumped, but that's the game. The other players were bumping people too. The action occurs when that *situation* is present, and is absent when it is absent. It is not something about *him,* but something about the *situation*—the game—that caused him to do it.

*See Kelley, 1967, 1972. We will consider only Kelley's theory of the attribution process, but there are others; see for example Jones and Davis, 1965.
[1]Heider, 1958.

But in the other case we must say: No, there was nothing about the situation that caused him to do that, for the game wasn't in progress. Other players didn't do it. Therefore, it must be something about *him.*

This example illustrates what Kelley calls **consensus.** In making attributions, we ask: Do most people do what the actor did? If so, that *high consensus* leads us to think that the situation caused the action. It is the situation that is present when the action is present and absent when it is absent. But if consensus is low, if most people don't behave like that, then the action reveals something about the *person*—an angry disposition, perhaps.

A second source of information is **consistency.** Does the bumper often behave like that? If he does—if consistency is high—it must be something about *him* that makes him do it. *He* is present when the action is present, and absent when it is absent. If he does not often act that way—if consistency is low—then it must be something about the situation that made him do it that particular time.

Third is **distinctiveness.** This has to do with the object, or target, of the action. Suppose Sandy bumps Billy. Does she bump everybody, or just Billy? If she bumps everybody, then Billy's distinctiveness is low; Billy isn't distinctively different from others in provoking such behavior. That says something about Sandy. If Sandy bumps only Billy and no one else —if Billy's distinctiveness is high—then it is Billy, the target, that is present when the action is present, and absent when it is absent. We conclude that something about Billy was responsible. Billy may wear a "bump me" sign, or Sandy may have a personal grudge against her.

To summarize: According to Kelley, we depend heavily on three sources of information in attributing causes to actions:

1. Consensus. Do other people do that?
2. Consistency. Does she often do that?
3. Distinctiveness. Does she do that to other people or things, or only to this person or thing?

This example also introduces a distinction between two kinds, or classes, of causal attribution. We may conclude that the action occurred because of something about the actor—his personality, or mood, or intelligence level, or disposition. That is called an *internal attribution;* we attribute the action to something inside the actor. Or we may conclude that the cause of the action was external to the actor, something about the situation. That is an *external* or *situational* attribution. This distinction will be important later on.

What is most important, though, is the logic presumed to underlie the attribution process. As described so far, it is a rational use of data to arrive at a scientific conclusion: What caused the action is what is present when the action occurs, and absent when it doesn't occur.

A Look Backward: Attributions and Motives

Attribution theory is not, strictly speaking a motivational theory. It deals with our *beliefs about* peoples' motives. Yet it is closely related to our topic. Consider again our basic motivational question: "Why did he or she do that?" A good reply will often look like this: "Well, beliefs and utilities combine to guide actions. Now in the present case, he did what he did because he believed thus-and-so; and *here's why he believed it"* (the attributional analysis). That is how attribution theory meshes with the study of motivation.

Cognitive Constraints Revisited

But there is a problem in all this. Attribution theory describes the way a coldly logical person would go about explaining an action—what data she would seek, and what inferences she would make from those data. Do we really attribute causes in such a rational, *normatively correct* way as the theory describes?

Often we do not. There is a substantial literature in cognitive psychology, showing that in real life we treat data and make inferences in, shall we say, strange ways.* And with good reason. The problem is: How much time and effort can we allocate to determining causes?

Consider: Joe jostles Jill, and we wonder why. Attribution theory tells us to look at how other people respond to Jill (consensus), how John responds to other people (distinctiveness), and how John responds to Jill at other times (consistency). But wait a minute! It would take a whole research project to gather all that information. We're busy; and anyway, we are just idly curious about why Joe jostled Jill. Of course we will not proceed that way. It *isn't worth it.*

Then there is the other extreme. A prowler is prowling outside. Why is he doing that? Because he intends to burgle our house, or for some other reason? We cannot even write the proposal for the research project that would gather the data we need for a careful attributional analysis. There *isn't time.*

And now we're on familiar ground. We saw in Chapter 10 that the normative theory of decision-making is too much trouble for trivial decisions, and takes too long for emergencies. The same problem arises when we seek to make causal attributions. The normatively best way to proceed requires too great an *allocation* of our limited resources—time, effort, or both.

And the solution to our dilemma is the same. We develop alternative strategies, analogous to satisficing or bettering, so that we can form beliefs at less cognitive expense. In the next section, we will consider these cognitive time- and labor-savers.

*For reviews see Fiske and Taylor, 1984; Kahneman et al, 1982; Nisbett and Ross, 1980.

COGNITIVE SHORTCUTS

An exhaustive and exhausting survey of all relevant data would not serve us well for most everyday judgments and attributions. It is too expensive in time and effort. So we use ways of making judgments and forming beliefs that are quicker and more efficient, even if less accurate, than the normatively-best scientific approach.

Heuristics

A **heuristic** is a rule of thumb. It is a principle which, while not guaranteed to work every time, will work well enough for practical purposes most of the time. We use certain cognitive rules of thumb in deciding what to believe, or what to do. Let us look at some of these.*

The Availability Heuristic

In forming beliefs, we depend heavily on what we can remember about cases like the one that confronts us. So we search our memories for relevant information. The **availability heuristic** is a rule of thumb that says: Deal with the first few things you can remember. In other words: Use the information that is most readily *available* in memory.

What affects the availability of items in memory? It depends on how *noticeable* and *memorable* they are—how likely we were to notice an event when it happened, and how likely we are to recall it now. These in turn depend on a number of things—how recently or how often we've encountered such an event, and how noticeable or salient it was relative to other events.

As a specific example, *events* themselves are likely to be noticed and remembered. Non-events, things that do *not* occur, are not likely to be noticed or remembered—even if their non-occurrence is informative.

Even this simple mechanism can wreak havoc. Consider a scenario:

> P and O are roommates. P has the annoying habit of leaving his socks on the floor for O to pick up. After the two discuss the matter, P agrees to deal with his own socks. Usually he does; and when he does, O hardly notices, for it is only what is expected (compare *surprises,* pp. 215–218). But occasionally P forgets and leaves his socks on the floor, and O picks them up—noticing, resenting, and remembering.
>
> The confrontation is easy to imagine. O says to P, "My goodness, P," or words to that effect, "you *always* throw your socks on the floor!" For in fact, the only socks-related episodes O has available in memory are of just that kind. Whereas P, who remembers all the times he might have thrown his socks on the floor, but didn't, replies: "I most certainly do not!" Escalation is likely.

*For an excellent and highly readable treatment of the issues touched on here, see Nisbett and Ross, 1980. The following sketch draws heavily on their discussion.

The Representativeness Heuristic

Another rule of thumb is that *similar things belong together.* That is the **representativeness heuristic.** For instance, we assume that actors resemble their actions. We assume that causes resemble their effects.

One example of this is the **halo effect**, the tendency for persons high in one "good" attribute to be rated high in others as well. Good qualities, we assume, go with good people; bad qualities, with bad people. In an experimental demonstration, a child's misbehavior was judged as a milder offense if an attractive child committed it. And the child was judged less likely to misbehave again if he was shown as attractive than if he was shown as ugly. Thus predictions—subjective probabilities—are affected as well as judgments.[2]

Conversely: If bad things happen to us, we must be bad people. In the days after World War II, a group of German civilians was taken through a nearby Nazi death camp. One was heard to say, "What terrible criminals these prisoners must have been to get such punishment."[3]

Schemata

Many of our beliefs—perhaps most—are based not on observation but on what we already know or have been told. Our systems of knowledge about particular domains—kinds of people, kinds of situations, and the like—are called **schemata** (singular, *schema*).

Schemata are vitally important, for they tell us what to expect, and what to do, even when we have no observations to draw upon. Suppose we meet a professor we have never encountered before. Still, we know a great deal about her because we know about professors; we have a professor schema (Figure 11-1). She will probably lecture or lead discussions, suggest readings, and turn in some evaluation of students' performances at term's end. She will probably not serve us filet mignon, write us a speeding ticket, or jump up on a table and sing "Melancholy Baby."

In short, we know quite a lot about a professor before we observe anything about her. What we know comes from a kind of logical inference: I know these things about Xs, *this* is an X, therefore I know these things about *this* too.

We also have schemata, or **scripts**, about event sequences. We have a script that tells us how to behave in a restaurant, for example. When we enter a new restaurant, we may not know its details yet, but the script tells us that we will order food, eat it, pay for it, and leave. So, even in a brand-new restaurant, we know quite a bit about what to expect and what to do.

Cognitive programs, or *plans,* are schemata (see Chapter 9). These include our knowledge of how to drive home, how to order from a menu, and the like.

[2]Dion, 1972.
[3]Gleitman, 1981, p. 558.

Figure 11-1.
By classifying persons or events—that is, by assimilating them to schemata—we make available our prior knowledge about persons or events of that kind.

Finally, there is a class of schemata that will be especially important for us: **causal schemata**, or theories about what causes what. "Where there's smoke there's fire" is a causal schema. So is "People get what they deserve in life"—a person's characteristics determine how he fares. These causal theories have tremendous impact on the beliefs we adopt—whether the theories are right or wrong.

Schemata, like action systems, form a lattice hierarchy. This stranger we've just met clicks into the schema *professor* and the schema *woman,* and both of these are components of the schema *person.* There are more restricted component schemata in turn; if someone tells us, "Professor Bunzoff teaches a really stiff course," that triggers the *hard professor* schema, and tells us a great deal right there.

It is likely that every event or person we encounter is immediately classified, or, as we say, *assimilated to a schema.* Once that happens, our actions are affected not just by what we observe, but by what we know —or think we know—about that kind of thing.

Schema-driven Inference

These schemata obviously are of enormous value, most of the time, in telling us what to expect and what we ought to do about it. But then there are the other times, when they do not serve us well. That is most likely to happen when we depend exclusively on our prior knowledge or theo-

ries—our schemata—without checking the specifics of the case at hand. In other words, we use schemata as *substitutes* for observations, when observations are what we need. That is **schema-driven inference.** It says in effect: "I know all about it. Who needs facts?" It is interesting that we have a special name for schemata when they are used that way. We call them "preconceptions."

An obvious example is the **false stereotype.** Consider the belief, widely held by both men and women, that women are no good at math. The belief is false; but if a woman's math professor, or the woman herself, believes it, this can have unfortunate consequences. The woman may avoid math courses or, if she takes one, give up and not study. The professor may be reluctant to help her, or he may look at her papers in a cursory way, their fate already sealed.

Schema-triggered Affect

> *I say it's spinach, and I say the hell with it.*
> —Little boy in a *New Yorker* cartoon

Besides containing information (or misinformation), schemata may also include emotion or affect. When we apply the *emotional* contents of a schema to a person or situation, we have **schema-triggered affect.**[4] If we don't like professors (or spinach), then we will probably dislike *this* professor (or this bowl of spinach) even before we have any interactions with the one or taste the other.

Such things as accidental resemblance can trigger a schema, including its emotional component. We may take an instant dislike to a teacher because she reminds us of old Miss Phacemask whom we so hated in the second grade.

A trivial matter, do we say? President Harry S Truman, who was not usually the most trusting of men, placed a great deal of trust in the leader of the Soviet Union, Josef Stalin. His private correspondence tells us why: Stalin reminded Truman of a man who had befriended Truman when he was younger![5] Stalin's appearance and manner triggered the schema for the old friend, and its affective component—"trustworthy"—was applied to the Russian dictator. The leaders of nations fall into schematic thinking, even as you and I.

Combining Shortcuts

We are not restricted to one or another cognitive shortcut. Often we combine them. Then, if used appropriately, they save us all the more time and effort. If used inappropriately, they can get us even deeper into trouble.

[4]Fiske, 1982.
[5]May, 1973.

To see this, and to review these themes, let's consider a case that combines several of them. Let us look again at the rape-acquittal episode with which we began this chapter, and see how what we have learned can help us understand what might have happened. That will also remind us that we are not discussing trivial matters here.

For purposes of example, suppose it was a case of date rape. The male made an advance. The female said no. But the male believed that no means yes, and so he inferred that it meant yes this time. That is *schema-driven inference.*

The crime occurred and the male was brought to trial. The judge looked for the cause of his behavior. Well, the act was extreme, and it was sexual, so the judge *attributed* it to extreme sexual motivation. That is the *representativeness heuristic.* We assume that similar things go together; therefore, causes resemble their effects.

Now the judge had to ask: Where did the extreme sexual motivation come from? The man was not so extremely motivated all the time (low *consistency*) or with all women (high *distinctiveness*), and most men do not behave like that (low *consensus*); and so the judge made an *external* attribution, attributing the male's action to the situation. To what about the situation? Well, the woman was wearing a short skirt. Perhaps that caught the judge's attention *(availability),* and perhaps it triggered schemata of his own. He may have believed another common myth, that women secretly want to be raped and "ask for it" by dressing provocatively; and, disapproving of this, he disapproved of the victim as well *(schema-driven affect).* He certainly believed that provocative dress inflames male passions. So, his decision was another schema-driven inference. Suddenly the victim became the perpetrator—it was all *her* fault!

A Look Backward: Shortcuts and Decisions

This discussion, like much of the literature on this problem, has emphasized the errors that heuristic and schematic thinking can produce. Yet the use of these cognitive shortcuts is not an inherently foolish way to proceed.

The Value of Shortcuts

We operate under constraints. We can handle only so much information at a time, and we have limited time for thinking. Heuristics and schemata serve us well, most of the time, by reducing the amount of information we have to deal with.

Take availability, for instance. If we encounter a tiger, we really don't want to run through *all* we know about tigers—tiger begins with T, tigers are mammals, tigers live in Asia but the *Tarzan* books got it muddled and put them in Africa—before deciding what to do. We have time to think of only a few things, and they might as well be the most noticeable and memorable ones. After all, noticeable and memorable things do tend to be important, most of the time.

As for schemata, it is inconceivable that we could function without

them. We would have to forget all we knew and start from scratch in investigating every situation, an intolerable cognitive burden. Then too, letting our acts be guided by a causal theory is not necessarily irrational even if the theory is wrong. Suppose we lived in a society that does a communal rain dance in the spring; then the rains come and the crops grow. Now, a simple experiment would show that the rain dance has nothing to do with it; the rains would come anyway. But the community is not about to omit the rain dance just to see what will happen! The crops are too important, and the present practice is good enough. As we say: If it ain't broke, don't fix it (another heuristic!).

Thus heuristic and schematic thinking are not automatically bad thinking. They can be seen as a kind of cognitive *satisficing,* a set of cognitive operations which work well enough, most of the time, for us to make sense of the world and get around in it. Trouble arises because we may substitute these shortcuts even when better information is available, and even when the judgment is important. We satisfice, so to speak, when we could and should maximize instead.

Where do these satisficing operations come from? Possibly we learn to use them. Or, some may be products of evolution. Some of the instinctive rules that animals use could be called *untaught schemata*—for example, if I feel sick, it's because of something I ate; or if I'm in danger, it's a good idea to freeze.

Are some heuristics in the human case also untaught? Possibly. Looking across cultures, we see that homeopathic medicine, based on the representativeness heuristic, is widespread in the world. It is as if it reflected a universal human tendency to group like with like.*

Thus, cognitive shortcuts, which reduce the amount of time and effort we must allocate to cognition, may include untaught characteristics of the human mind—and other minds as well.

Schemata and Frames

We could look at the matter in a different way that relates these ideas to other familiar ones. In Chapter 10, we saw that in making a decision, we consider only the options that occur to us—the ones that fall inside the *frame* of available options. No decision-making strategy will lead us to take an action that we don't consider taking. And how we think about a problem—what schemata we apply to it—has a great deal to do with what we do or do not consider.

There was once a king who died of a fever, brought on by sitting too close to a hot brazier. He continued to sit there, literally roasting to death, because the servant whose job it was to move the brazier couldn't be found.[6] Apparently it never occurred to His Majesty to move the brazier

*Homeopathic medicine is based on finding cures that resemble the symptoms of the illness, or that resemble the state of health that is desired. Respiratory disorders, for instance, may be treated with drugs made from the lungs of a fox, an animal supposed to have very strong respiratory powers. Like produces like—because effects resemble causes!

[6]Tuchman, 1984.

himself—because that action didn't fit his royal schema. It fell outside the frame of "things kings do for themselves."

There are exact parallels to this "blindness" in belief and thought. As we may fail to solve a problem because a course of action never occurs to us, so we may fail to solve it because certain *ideas* never occur to us. And they may not occur to us because they don't fit a schema. As an example, consider this riddle:

> A boy and his father were in an automobile accident. The father was killed instantly. The boy was alive but badly injured, and was rushed to the hospital and prepared for emergency surgery. But the surgeon, on seeing the boy, said, "I can't operate on that boy. He's my son."

How can that be? (No, it has nothing to do with adoption or reincarnation.) If you see the solution right away, try the riddle on your friends and see how long it takes them to see it. If you don't see it right off, think about it until you do. Then think about what its difficulty implies about us, as schema-driven thinkers.

Shortcuts and Satisficing

There is still another old idea that arises in a new context here. When we discussed *satisficing* in decision-making, we saw that the order in which alternatives are considered makes a great difference. In deciding where to go for lunch, either Archie's Place or Zorba's Place might be good enough; and we'd go to whichever place we thought of first. So whenever we use a satisficing strategy—and that is very often—we could reach different solutions to the same decision problem, depending on which options we think of first.

Well, what will we think of first? We will think of the options most available in memory, and those that are most typical solutions to the *kind* of problem we see the decision problem to be. In other words, heuristics and schemata affect our decisions by affecting whether an option will come to mind early or late. When we satisfice, if we don't think of an option early, we probably won't consider it at all.

Heuristics, Schemata, and Hunches

Finally, let us again look back to Chapter 10. There we saw that most humans operate most of the time on hunches, intuitions, and habits—not on rational calculations. Well, heuristics and schemata sound a lot like hunches and habits—habits of thought, if you like. Perhaps in these cognitive shortcuts we have a partial solution to the pigeon/poker paradox: These ways of making decisions work well enough, most of the time, to produce satisfactory and even rational-looking results, by not-quite-rational means.

THE COGNITIVE-COHERENCE MOTIVE

In the previous section, we looked at shortcuts designed to save us cognitive work. Now let us look at the other side of the coin. We may also *spend* cognitive time and effort, when at first it would seem that we don't have to. We do it in order to keep our ideas simple, coherent, and intelligible.

We began this book by noting that the itch to understand things, to make sense of them, to perceive the world as orderly and coherent, is a powerful motive for human beings. It is the driving force behind science itself. We *want things to make sense,* and we are willing to do some cognitive work to make them do so.

Coherence in Perception

This work occurs even in the perception of simple figures. Take a look at Figure 11-2, a simple cube. We have some options as to just how we see the cube. We can see it with the northwest face forward, or with the southeast face forward. But we cannot, without a great deal of effort, see it as a two-dimensional array of lines with nothing forward of anything else—which is what it is! As an array of lines, it is just too complicated to perceive as a unit. We do the cognitive work of creating a non-existent third dimension. Then the complex array of lines snaps into a simple, coherent figure—a three-dimensional cube.

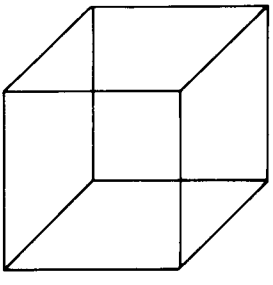

Figure 11-2.
A two-dimensional array of lines that is seen as a three-dimensional cube.

Actually, that bit of mental work probably *saves* us work in the long run. As a result of it, we don't have to contemplate a complex, puzzling figure. It's a cube, that's all, and we know all about cubes. That saving in mental effort may well be the basis of the cognitive-coherence motive.

The principle operates in time as well as space, to affect our perception of events and actions as well as of simple pictures. We try to perceive these too as simple, complete, well-organized wholes. We don't like it when events don't make sense, or when actions are left up in the air.

Here is a demonstration that I use in lecturing. While talking, I take out

a cigarette and put it in my mouth. I begin to light it, but then remove it from my mouth as if struck by a thought, and say a few words. I put it back in in mouth, begin to light it, remove it again and say something more . . . I seldom have to do that more than three or four times before the tension becomes unbearable, with shuffling of feet and perfectly audible mutters of "Will you *light* that thing?"

Coherence and Memory

We do cognitive work, then, to make our perceptions coherent and simple. We work on our memories, too, to produce coherence and simplicity over *time.*

This has been clearly demonstrated in the study of *eyewitness testimony.* Elizabeth Loftus and her colleagues find that subjects rewrite their memories of events so that old memories are made coherent with new inputs—new questions, for example. In one study,[7] subjects watched a movie of a traffic accident. If they then were asked, "How fast were the cars going when they *smashed into* each other?" the subjects "remembered" higher speeds than if the word *hit* was used instead of *smashed into.* Asked, "Did another car pass the red Datsun while it was stopped at the stop sign?" subjects later "remembered" a stop sign that hadn't been there. This sort of question-induced rewriting of memory could cause a witness to "recognize" a "criminal" who was not present at the crime at all.[8]

We rewrite memories not only about events, but about ourselves as well. In one study, after having given their opinions on a topic, students were induced to write an essay *opposing* that opinion. Later on, the students' attitudes showed a shift in the direction of the essay's position (see *cognitive dissonance,* pp. 395–401). More surprising, the students then remembered their *previous* attitudes—expressed only a week earlier —as similar to their present ones, rather than as they actually had been.[9]

All these distortions reflect what we have called cognitive work—something we *do* to our perceptions and memories that changes them, making them less accurate, but less complicated too. As we transform a two-dimensional figure into three dimensions, so we transform a memory for a previous attitude into one that agrees with our current one.

This also may save us cognitive work in the long run.[10] Perhaps knowledge can best be organized, and retrieved as needed, if it is kept free from ifs, ands, and buts. "I've always thought Y" is easier to remember than "I didn't think Y before, but I think Y now." By rewriting memory, we lighten our memory load, even at the cost of inaccuracy.

[7]Loftus and Palmer, 1974.
[8]Greenwald, 1980.
[9]Bem and McConnell, 1970; see also Wixon and Laird, 1976.
[10]Greenwald, 1980.

COHERENCE AND CAUSAL ATTRIBUTION

A special case of the cognitive-coherence motive is so important that it rates a section of its own. In our efforts to make the world intelligible, finding **causal explanations** for events plays a central role. We may do a formidable amount of cognitive work to answer the question: Why did that happen?

The Goal of Causal Understanding

The search for causal understanding is not always just idle wondering. It can have all the properties of purposive, goal-directed behavior. For example, Shelley Taylor[11] has examined this process in cancer patients, cardiac patients, and others faced with life-threatening events. In people's reactions to such events, she finds that a *search for causal explanation* is prominent. People ask themselves: What caused the event to happen?

And they find, or construct, answers. The true cause or causes of cancer are unknown. Nevertheless, almost all cancer patients (95 percent in Taylor's sample) adopted some explanation for their disease: stress, diet, heredity, or *something.* Interestingly, far fewer (63 percent) of the patients' *spouses* adopted such explanations. This difference suggests that the patients' search for explanation was an *active, goal-directed process;* the patients were not just parroting the explanations offered by folklore. If it were only that, such explanations should have come as readily from the spouses as from the patients.

Even more revealing is what happened when a causal explanation was disconfirmed. Most patients would quickly pick up another one to replace it. One patient, for instance, blamed her cancer on a recent car accident and wanted to sue the other driver. Assured by her doctor and her lawyer that that causal theory was unfounded, she promptly switched to another cause instead. The whole process reminds us of our definition of a motivational state. The actor takes *whatever means is available* to reach a goal —here, the goal of feeling that one understands why one is ill. And a patient does take any cognitive means available to attain that goal; if one explanation won't work, she will try another.

The urge to understand may be yet another universal characteristic of the human mind. Every culture we know of has invented *myths*—causal stories, or causal theories, about why the world is as it is and where it came from. Inasmuch as these include some of the world's finest literature, it is evident that the cognitive work put into them is very considerable.

Cognitive Conservatism: The Stubbornness of Schemata

If cognitive work may be done to keep our perceptions, memories, and self-concepts *simple,* it is also done to keep them *stable.* This has been

[11]Taylor, 1983.

called **cognitive conservatism**[12]—a disposition to keep existing knowledge structures the way they are. In a word, we resist changing our minds.

> One of the authors, in his first years of teaching, was amazed and disturbed by the tendency of many of his female undergraduate students to maintain negative stereotypes of their mathematical abilities even though their successes belied such stereotypes. Often, a student would succeed admirably in a statistics course that, on the first day of class, she had tearfully predicted she would fail. Such a student usually proved capable of readily assimilating her unanticipated success to her previous view of herself, assigning credit to the lucidity and patience of the instructor, to her strenuous efforts, or to the "easiness" of the course. It was quite difficult to get such a student to entertain the possibility that her previous theory about herself was simply wrong.[13]

Such a student's self-concept, or self-schema, contains the item "I can't do math." And the schema is defended against contrary data. In the example, such data were dismissed by a *schema-driven inference:* The woman inferred her success was due to luck and effort, and not to ability. And she did that, not because the data required such an inference but because her self-schema did.

The process has been demonstrated experimentally as well. In one such study,[14] subjects were given false information about how well they were doing at a novel task. Some were told they were doing well; others, that they were doing poorly.

Then the experimenter "debriefed" the subjects, telling them—truthfully—that they had been *assigned* to receive bogus evaluations, good or bad, by a random-number table. They were even shown the experimenter's instruction sheet, assigning them to one or the other condition before the task had even begun. Surely, this total discrediting of the evidence should have convinced the subjects that the information they had received was worthless, and that it implied nothing about their ability at the task.

Not so. When asked how likely they were to do well at such a task in the future, subjects receiving a bad initial report continued to rate themselves lower than those who had received a good initial report. What the subjects were told at the outset—"You're doing well" or "You're doing poorly"—seemed to set up a theory in the subject's mind about his own ability at the task. And the theory persisted *after the evidence for it was totally discredited.*

[12]Greenwald, 1980.
[13]Nisbett and Ross, 1980.
[14]Ross, Lepper, and Hubbard, 1975; see also Ross and Anderson, 1982.

How Are Schemata Defended?

We defend our opinions, theories, and concepts—our schemata—against data that challenge them. How do we defend them? There are several ways.

Selective Information Processing

In the first place, schemata serve as organizers of information, and so new information, as it comes in, is assimilated to them. For instance,[15] subjects watched a videotape of a woman having dinner with her husband. Some were told she worked as a waitress; they remembered seeing that she drank beer and owned a television. Others were told she worked as a librarian; they remembered that she wore glasses and owned classical records. In a word, memory was **selective**. What was remembered was what fit the stereotype; and, therefore, what was remembered supported it.

Elastic Attribution

The *attribution* process selects among many possible causal explanations for any event. Since there are so many options, it is likely that *some* explanation can be found that is consistent with the schema, and so allows us to hang on to it. We saw this earlier in the case of the woman who did well on a statistics exam. By attributing success to luck or effort, rather than to ability, she defended her theory of herself: "Nevertheless, I can't do math!"

Similar mechanisms can allow a prejudiced person to defend her prejudices against any assault by the facts. Suppose we believe that members of Group X are incompetent. We meet a member of Group X who has done well at a demanding job, and therefore seems highly competent. Is he evidence against our belief? No; we simply attribute his success to an external cause—he was lucky, or people smoothed the way for him. But if we see a member of Group X who is not in fact doing well, we attribute it to *him*—he is incompetent—and that too fits our prejudice! A person of Group X is compatible with our prejudiced schema whether he does good things or bad things, succeeds or fails. Actual research has shown the process in action (Figure 11-3).[16]

The Self-Fulfilling Prophecy

The surest way of guarding a theory from contrary data is not to let the contrary data arise. If our theory says that X ought to happen, we may act in such a way as to assure that it will. The theory becomes a **self-fulfilling prophecy**. The student convinced that she can't learn statistics may not study—and so never learn statistics.

[15]Cohen, 1981.
[16]Pettigrew, 1979.

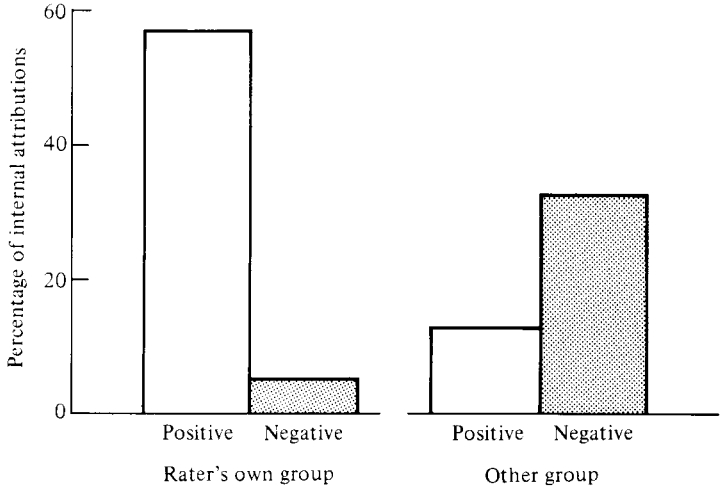

Figure 11-3.
Elastic attribution. These data were collected in India, at a time when hostility among religious groups was intense. Subjects were given descriptions of actions—some good actions, some bad ones—and were asked to choose the most likely cause of each action. For each kind of action, some were described as carried out by a member of the rater's own group; others, as carried out by a member of the other group that the rater disliked. Positive actions by one's own group, and negative actions by the other-group members, were more likely to receive *internal* attributions—the acts were attributed to characteristics of the actor. Bad actions by one's own group, and good actions by the other group, usually received *external* attributions —the acts were assumed to be caused by the situation. (Data from Pettigrew, 1979.)

WOODEN-HEADEDNESS

Finally, there is what historian Barbara Tuchman[17] has called **wooden-headedness**. This is a failure, or refusal, to lay our theories alongside the facts at all. We might call it the pure case of schema-driven inference; it says, "My mind is made up. Don't confuse me with facts."

Gordon Allport, in his classic book *The Nature of Prejudice,* reported the following dialogue[18]:

> X: The trouble with the Jews is that they only take care of their own group.
> Y: But the record of the Community Chest campaign shows that they gave more generously . . . to the general charities of the community than do non-Jews.

[17]Tuchman, 1984.
[18]Allport, 1954, pp. 13–14.

X: That shows they are always trying to buy favor and intrude into Christian affairs. They think of nothing but money; that is why there are so many Jewish bankers.
Y: But a recent study shows that the percentage of Jews in the banking business is negligible, far smaller than the percentage of non-Jews.
X: That's just it; they don't go in for respectable business; they are only in the movie business or run night clubs.*

Striking in this dialogue is how Mr. X's mutually incompatible and totally wrong beliefs never confronted either the facts or each other. So, neither their falseness nor their contradictions (there are so many Jewish bankers/they don't go into respectable business) were recognized. The "facts" lived in logic-tight compartments, impervious to evidence.

Refusal to acknowledge facts has a long history, as Tuchman shows. "No matter how often a campaign that depended on living off a hostile country ran into want and even starvation, as in the English invasions of France in the Hundred Years' War, campaigns for which this fate was inevitable were regularly undertaken."[19]

About some things, we just don't learn.

Why not? Perhaps, in such cases, we simply do not do the cognitive work of relating the data to the theory at all. We do not detect the clash of the data with the theory, because we don't compare them. It is somewhat like the "mindlessness" with which the driving-home plan clanks away so that we forget the fish (see pp. 317–318). So here, if we "mindlessly" follow a theory without checking it, then it goes uncorrected, however often it is disconfirmed.

A Look Backward: Conservatism and Cognitive Constraints

The stubbornness of our theories is yet another cognitive complication that is not, in itself, foolish or maladaptive. A scientist may hold on to a well-supported theory, even in the face of contrary evidence; it is not necessarily irrational to trust the theory more than the evidence. And our opinions of others and ourselves should not be expected to drift with every exception or inconsistency. "[I]f you changed your mind about your integrity every time you let a parking meter run out, you would never be sure of exactly who you were."[20] Cognitive conservatism can be justified, then, on the grounds that proceeding any other way is simply too *expensive* in the time and effort it would take to keep updating our opinions and theories as life went on around us.

Conservatism becomes a problem when it is *too* conservative. But this

*Allport's book was written in 1954, and it would be comforting to think that our society has outgrown that sort of thinking. But the following was said in 1974: "Jewish influence in Congress . . . is so strong you wouldn't believe it. . . . They own, you know, the banks in this country, the newspapers. Just look at where the Jewish money is." The speaker was chairman of the Joint Chiefs of Staff.

[19]Tuchman, 1984, p. 8.

[20]Fiske and Taylor, 1984, p. 156.

happens often; we are likely to have much more confidence in our opinions, and cling to our theories much more stubbornly, than is rational or even sensible.[21] In the extreme case, no data can shake our theory, because we make no use of data at all—and we have wooden-headedness.

When Are Schemata Defended?

Obviously, cognitive conservatism operates within limits. We don't *always* resist changing our minds. We have even been known to admit that we were wrong. When do we do that, and when do we defend our theories?

Some writers have suggested that we follow a least-effort principle here.[22] If a belief is weak and the disconfirming evidence is strong, we are likely to change our minds. If the reverse is true, we don't; we reject the weak evidence instead. But when strong evidence meets a strongly held contrary belief, we have a dilemma. Something has to give; and it may require less cognitive work to bend the data to the theory, or ignore the data entirely, than to modify a theoretical view of the world.

By this argument, cognitive conservatism minimizes the allocation of effort to cognitive processes. We could even relate it to the minimal-distance model (pp. 348–353), if we assume that our most-preferred mix of activities would allocate very little time and effort to thinking about what is going on, what the world is like, and what it all means.

We could summarize these ideas with two principles: (1) we are willing to do cognitive work to attain the goal of keeping things simple in our minds—cognitive coherence. But (2) we want to do as little work as possible to achieve *that* goal too; and once the job is done, we will return to re-do it only if we must—cognitive conservatism.

These ideas show how cognitive conservatism is related to earlier topics. Recall the Janis and Mann model of decision-making, which says that careful, rational decision-making is most likely when (1) the problem is serious (there are risks whatever we do), and (2) we have time for careful thought. Similar principles may apply here. There is evidence that we do think more carefully about causal attribution if the issue is important.[23] And we are more likely to notice and remember information that does *not* fit a stereotype, if we have time to think about that information.[24]

Perhaps rational beliefs are likely to be formed under the conditions that promote rational decision-making in general. The trouble is that careful thought, like careful decision-making, may not occur unless risks are recognized. To think through our beliefs we must recognize the risks of routine, habitual, heuristic-driven, and schema-driven thinking.

[21]See for example Einhorn, 1982; Slovic et al., 1982.
[22]Alloy and Tabachnik, 1984; Fiske and Taylor, 1984.
[23]Chaiken, 1980.
[24]For review see Fiske and Taylor, 1984.

COGNITIVE DISSONANCE: HOW ACTIONS AFFECT VALUES

With this topic, we reverse the causal order in decisions. These, we have said, are affected by our beliefs—subjective probabilities—and our desires or preferences—utilities. But now we will see how these variables are themselves affected *by* the decisions we make.

The Concept of Cognitive Dissonance

The basic idea, first stated by Leon Festinger, is this.[25] We feel that our actions *ought* to be consistent with our beliefs and values. We ought to behave like rational decision-makers. If our cognitions seem to go one way and our behavior another, something is amiss; something doesn't make sense. We will try to bring the behavior and the cognitions into line with each other.

Finally, if the behavior itself has already occurred, then it cannot be modified now. So what can be modified? Our attitudes and values! We may modify these so that they are no longer inconsistent or, as Festinger says, *dissonant,* with what we have done.

Cognitive dissonance, then, is a perceived inconsistency between our attitudes and our actions, which causes us to change our attitudes so that they become consistent with our actions.

Experimental Demonstrations

Here is the classic demonstration of this effect. Each of the subjects was brought to the laboratory and was given some tasks to perform. These were purposely made dull, useless tasks—packing spools in a tray and dumping them out and then packing them in again, for example. After that, the subject was released into the waiting room, and here the real experiment began.

The experimenter said, in effect: "Look, another subject is waiting to do the same things you did, and it's important that she think the task she's about to perform is interesting and enjoyable. Tell her it was, will you? I will pay you . . ." And then some subjects were offered a dollar, but others were offered twenty dollars, to tell the lie. An ingenious cover story made all this sound quite plausible.

Now let us try to empathize with the subject after he has complied. Let us assume that we have a self-schema that says: "I'm a reasonably good person. I'm OK." But as subjects, we now have another item of knowledge: "I just told a bare-faced lie." Those two items do not fit together. Our self-image has lost coherence; it doesn't make sense any more.

Or does it? It does if we can say, "Well, for 20 dollars who wouldn't tell a harmless lie? I did it, but I'm still OK." The large external reward lets the items of knowledge fall into a coherent pattern (Figure 11-4A).

[25]Festinger and Carlsmith, 1959.

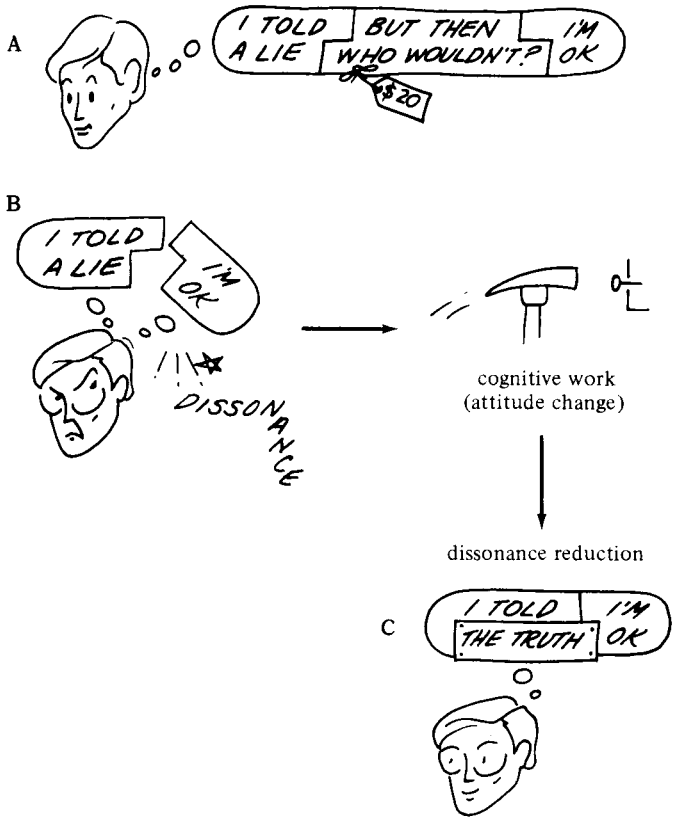

Figure 11-4.
Shift in attitude caused by cognitive dissonance. See text for explanation.

But what if there was no large external reward? A mere dollar doesn't justify a bare-faced lie. We are stuck with the dissonant cognitions: "I'm OK," but also, "I lied" (Figure 11-4B).

Then, says the theory, some cognitive work must be done. A subject could recover a coherent image of himself, *if* he could change one of the two cognitions so that they no longer clashed. Well, the lie is already told; the subject can't change that. But he *can change his attitude about the boring task itself.* If he can convince himself that it really wasn't so boring —that packing spools is a relaxing break from study, actually—then he would *not* have lied! And he could have a perfectly coherent view of himself, incorporating two quite compatible cognitions: "I'm OK," and "I told the truth about the task" (Figure 11-4C).

Therefore, the subjects who had told a lie for only a little money should later rate the task itself as more interesting and enjoyable than did the subjects who were paid well for their lie. And that is exactly what happened.

Another demonstration shows the generality of the idea.[26] It was shortly after a riot in New Haven, Connecticut, in which it was alleged that the police had behaved in a quite brutal manner. Students at Yale were incensed at their actions. Now, some students who held strongly anti-police opinions were asked to write essays *supporting* the police. As in the other study, some were paid highly, others were paid only a little, for doing so.

The results paralleled the spool-packing study. Students paid only a little for their pro-police essays actually developed a more favorable attitude toward the police, as measured after the essays were written. This is the dissonance condition: "I mis-stated what I believe. I wrote a lie, and for a lousy fifty cents! How could an OK person like me do that? Well, maybe it wasn't a lie; maybe the police were right after all."

Students paid highly had less reason to experience dissonance. "Yeah, I mis-stated what I believe, but for ten dollars who wouldn't, and what's the harm anyway?" And their anti-police attitudes remained strong.

Extensions of Dissonance Theory

The ramifications of this idea go far beyond such trivial matters as essays and spool-packing tasks. Let us look at just a few.

Blaming the Victim

There was a time when our nation, along with others, used the natives of other countries as sources of cheap labor. We forced other people to work for us, and we backed up the system with force—the police at home, the military abroad. This is the system of slavery that existed in early America, and the colonialism of American and European powers that persisted into the present century.

But how could we, the dominant group, treat other people in this way? We believe in humane and respectful treatment of other human beings. How can we reconcile those values with our actions?

Easily. We can convince ourselves that slaves are not people, but property; they are not fully human. Being lazy, they have no right to expect good pay. As for the use of force, well, slaves are childlike and, like children, must sometimes be punished for their own good.

Dissonance theory predicts that if we mistreat another person, we ought to think less of him or feel anger toward him afterward. Thus we bring our attitudes into line with our action: the action, already performed, of harming someone. We can even justify beating or killing a fellow human, if we convince ourselves that he deserves no better—that it is *his* fault! And if he deserves it, then that justifies our going on to mistreat him some more.

This example should start us thinking. It may start us thinking about

[26]Cohen, 1962.

the Nazi death camps of World War II. It may start us thinking about the unarmed and unresisting men, women, and infants gunned down by American soldiers at My Lai. Unspeakable barbarities have been committed by people who, in other aspects of their lives, are perfectly normal and decent—*and continue to regard themselves as such.* Dissonance theory might help us to understand how this can be.

Laboratory models of this situation have shown that the predicted attitude shift can and does occur. In one study,[27] volunteer students were assigned to watch another student being interviewed and then, after the interview, tell him that he seemed a dull and untrustworthy person. After that, the volunteers privately rated the student as actually less worthy and likable—even though they had delivered the insults specifically at the experimenter's request, and not on the basis of their observations at all! Perhaps, having said things that were certain to hurt the student's feelings, the subjects had to justify the action by convincing themselves that it was deserved.

The Psychology of Commitment

The dissonance phenomenon may also make it hard to abandon a course of action once we embark upon it. A decision to change to a new action may be dissonant with our knowledge that we have devoted time and effort, perhaps expense and risk, to the old action.

In an analysis of the Pentagon Papers, which documented America's ever-deeper involvement in Vietnam, journalist Ralph White points out that many of the decisions made by political and military leaders during the Vietnam War were based not on evidence that they would be effective, but on the need to justify actions already taken. For instance, the decision to escalate the bombing of North Vietnam was described as our "trump card," an action that would break the will of the North Vietnamese. It didn't. But the bombing continued anyway. The cognition, "We committed all that effort, resource, and danger to the bombing raids" would have clashed with the cognition, "Bombing raids don't weaken an enemy's morale." As White put it,[28] "There was a tendency, when actions were out of line with ideas, for decision-makers to align their ideas with their actions."* That is cognitive dissonance.

A dramatic demonstration of the effects of commitment is one we have met before—the group who predicted the approaching end of the world.[29] The predicted day of doom came and went, and nothing happened. In the face of this clear disconfirmatory evidence, did the group members abandon their beliefs? Not a bit of it. They adopted such wild rationalizations as, for example, that their faith had saved the world from disaster. In-

[27]Davis and Jones, 1960.
[28]White, 1971, p. 50.
*Historian Barbara Tuchman (1984) has shown how this pattern—action taken not for reasons of effectiveness, but to justify actions already taken—reverberates down through the ages, from the Greeks at Troy to the Americans at Vietnam.
[29]Festinger, Reicken, and Schachter, 1956.

deed, by every outward sign, their beliefs grew stronger rather than weaker! They began publicizing their views and actively seeking converts, things they had never done before.

Why? Quite possibly because any other action would have been inconsistent with their prior actions. Most had quit their jobs, stripped themselves of possessions, and settled into a house to await the day of doom. To say "We were wrong" would have made all these prior actions seem irrational and senseless. Instead, the group concluded: "We were right, but doom was withheld"—and then their prior actions, and the failure of doomsday, made perfect sense together.

Interpretations of Cognitive Dissonance

Let us turn from this sampling of cases that the dissonance mechanism might help us understand, to the question: How does it work?

The Discomfort Interpretation: Festinger's Theory

Festinger's original theory was that the clash of dissonant cognitions produces tension and discomfort.* We don't *like* it when things don't make sense. This discomfort is what motivates attitude change, so that we reduce the discomfort—negative feedback once again (Figure 11-5A).

Is dissonance uncomfortable? There is evidence that it is, but the evidence is indirect and complex.[30] This interpretation has not been ruled out, but it has not been firmly established either.

The Attribution Interpretation: Bem's Theory

Daryl Bem[31] has offered another idea, one that falls somewhere between a behavioristic theory and an attributional one. The idea is: We infer our own attitudes from observing our own behavior, just as we infer someone else's attitudes from observing his or her behavior (Figure 11-5B).

If we saw someone write an essay favoring the police, what would we conclude? That she probably has pro-police attitudes. What if we see ourselves writing such an essay? We make exactly the same inference about ourselves: If we do it, then *we* must have pro-police attitudes. However, if we knew that the other person had been paid well to write that essay, we would conclude that it was probably the payment rather than her attitudes that led to her doing so. Just so: If we know that *we* have been well paid, we make the corresponding inference about our own motivations.

*There is dispute about what produces the discomfort. It might reflect simple incompatibility between two ideas: The subject in a dissonance-shift experiment says to himself, "I said X when I believe Y. That doesn't make sense, and I'm uncomfortable when things don't make sense." But some writers (Aronson, 1980) argue that what produces discomfort is not just incompatibility between *any* two cognitions, but incompatibility between a cognition and our positive images of ourselves. By this theory, the person must not only say, "I said X when I believe Y," but also, "How could an honest, OK person like me do that?"

[30]See Zanna and Cooper, 1976.

[31]Bem, 1967, 1972.

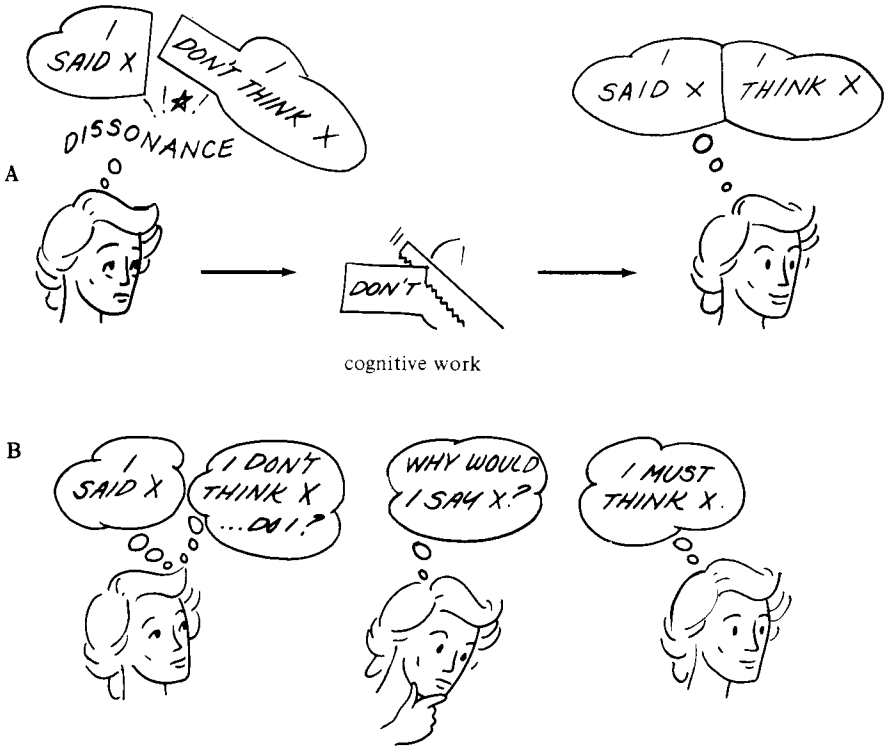

Figure 11-5.
Two interpretations of cognitive dissonance. (A) Festinger's discomfort theory. (B) Bem's self-attribution theory.

This is a cognitive interpretation of the dissonance experiments. It does not speak about drives or discomfort—there is no "clash of cognitions"—but simply about how we draw conclusions from evidence. If it appeals to motivation at all, it is only to our motive to assign causes to events and thus make sense of them. It looks forward to our later discussion of cognitions hot and cold (see pp. 410–414).*

A Look Forward: The Question of Self-Awareness

At first glance, Bem's theory sounds very strange. We observe our own behavior, he says, and infer what our attitudes and motives must be. Don't we *know* what they are? Can't we see them directly in ourselves?

Actually, the answer must be no—by *any* theory of dissonance. All theories imply that subjects do not, in fact, correctly identify the causes of their own actions. Take the essay study for instance. Yale students

*There are still other possible interpretations of dissonance, and it is likely that dissonance phenomena may occur for several reasons rather than just one. See Baumeister and Tice, 1984.

wrote essays they didn't believe, and for pennies. Why? Because the experimenters asked them to! If they had identified this *situational* cause of their action, there would have been no clash of cognitions (Festinger's theory), and no puzzling behavior to explain (Bem's theory). This looks forward again to our discussion of hot and cold cognitions, and to the issue of emotion and self-awareness in Chapter 12.

A Look Backward: The Status of Cognitive Dissonance

As Bem and others emphasize, we may not have to think of cognitive dissonance as an independent mechanism. It may take its place as a special case of some more general one—for example, the attribution process, or the coherence motive.

If cognitive dissonance is a special case of something else, however, it is a very important special case. Certainly it has offered us a new way of looking at a wide variety of phenomena. People who ask, "Why did he or she do that?" will find these ideas coming to mind with surprising frequency.

DO MOTIVES INFLUENCE COGNITIVE PROCESSING?

> *Reason is, and ought to be only the slave of the passions, and can never pretend to any other office than to serve and obey them.*
>
> —DAVID HUME

We have looked at cognitive coherence as a *goal* which our cognitive mechanisms may seek to attain. And we have seen that to attain that goal, our cognitive apparatus will accept some cost in accuracy, distorting reality here and there—rewriting our memories, for instance.

But is such distortion a special case, or the rule, as Hume claims? Is cognition the slave of our passions? Do we believe that X is the case because we *want* X to be the case? Do we believe that Y is false because it would be terrible if it were true? Do we refuse to see Z if Z displeases us?

In a word: Are our cognitive operations distorted by our likes and dislikes, our hopes and fears? If so, then rational decision-making, which assumes that beliefs reflect reality, would be compromised from the very start.

One important writer who agreed fully with Hume was Sigmund Freud. Let us begin with him.

The Freudian Defense Mechanisms

In psychoanalytic theory, the cognitive systems that make up the **ego**—the perceiving, judging, decision-making executive—develop so as to satisfy that bundle of uncomfortable urges, the **id**. Remember that for Freud

there is only one motive—relief from discomfort, the *pleasure principle.* Cognition is only a means to that end.

Cognition begins with the *primary process.* Tensions arising from the body are experienced as discomfort. The infant forms an image—nowadays we might say a *search image*—of the source of gratification. That is the primary process. The child then learns ways of finding the real object that matches the image. That is the *secondary process,* the beginning of rational thought, planning, and decision-making.

However, there are discomforts from other sources too. First, the immediate gratification of wishes might simply be dangerous. The person must inhibit the expression of urges until it is safe to express them. The ego, thinking ahead as the id cannot, produces such inhibition by opposing the urge with another one—anxiety, which blocks the expression of the wish. This **reality anxiety** is the anxiety produced by real external dangers.

Another source of discomfort is the *fear of disapproval.* Indiscriminate wish gratification brings disapproval from others, especially parents. The resulting expression of disapproval, perhaps mild from the parent's perspective, may be terrifying to the child. So there arises another source of anxiety, and this blocks actions that would lead to disapproval. Anxiety from that source Freud called **moral anxiety**. It is the basis of the **superego**, the internalized commands and prohibitions of the parents and society.

Thus the decision-making, planning ego operates under constraints; it has, as Freud put it, three harsh masters. It must (1) plan effective action to gratify id urges, while (2) suppressing impulses if they lead to danger, *and* (3) suppressing them if they lead to moral anxiety or guilt.

Now, a final and important complication. Like behaviorists, though for different reasons, Freud emphasized that *cognitive operations are actions.* They may not be distinguished from actual behavior; especially to a child, thinking about doing something is not so different from actually doing it. If performing an action is dangerous, so is thinking about performing it. And if performing it would bring guilt, thinking about it also brings guilt —moral anxiety.

Here is where motivational effects on cognition come in. The ego must find ways of modifying thoughts, as well as actions, so as to avoid anxiety —even if the thoughts are distorted as a result. These ways are the **defense mechanisms**. Defense against what? Against anxiety. Let us look at some examples.*

Repression

The mechanism of **repression**—an active pushing of thoughts and wishes out of consciousness—was Freud's most important defense mechanism, and all the others depend upon it. We can think of it as a kind of cognitive

*For discussion see Fenichel, 1945.

avoidance response; thoughts are inhibited, and denied access to consciousness, because it would be too anxiety-arousing to think them.[32]

But when pushed out of consciousness in that way, the original impulses do not go away. They are still striving for expression, but even the thought of expressing them generates so much anxiety that the person must disguise them from himself, as well as from others, and express them in symbolic form.

Reaction Formation

Another way of not thinking dangerous thoughts is to think opposite thoughts. If the thought of anger at our parents threatens to intrude and make us anxious, we can convert it to the opposite thought—how much we love our parents. And we can do this at the level of thought or of overt behavior, or both. That is **reaction formation.**

If a person makes repeated and vigorous protestations of love for her children, especially if she treats them with indifference in other ways, a psychoanalyst would suspect reaction formation. The mother may use these verbal declarations to hide, from herself as well as others, an unconscious hostility toward the children.

Projection

The **projection** of an emotion is the act of defending against the anxiety it causes by attributing it to another person, not oneself. One says: That terrible thought or feeling is not part of *me,* it's part of *him* instead. Thus, a person who sees other people as hostile and vicious may be concealing his own hostility from himself.

There are other defense mechanisms, but these are enough to give us the flavor. The important point is this. To Freud, the mind can operate in violently irrational ways in order to minimize the tensions of anxiety or guilt. Freud saw it ignoring logic, blocking memory, refusing to acknowledge feelings. Cognition for Freud is servant to our motives—not their partner, much less their master—and it is only as rational as the demands of our motives permit it to be.

A Look Backward: Cognitions and Urges

Freudian case histories make one thing very clear: Factors influence our thinking and our actions that do not fit the model of coldly rational decision-making. The defense mechanisms ring true. If they have entered our everyday speech, it is for good reason: We *see* these things happening in ourselves and in others. If a person goes on and on about how much she loves her family, all the while treating them with indifference, it does not take a psychoanalyst to say, "Methinks the lady doth protest too much." Shakespeare said that, three centuries before Freud.

A separate question, however, is whether such things happen for the reasons Freud gave. To him, cognitive mechanisms are motivated, like

[32]Dollard and Miller, 1950.

everything else we do, by tensions and urges. The defense mechanisms are motivated specifically by anxiety; they are defenses against worse anxiety, and reflect active, striving, opposing forces. But other, quite different interpretations are possible. Modern cognitive psychology has given us some new and different perspectives on these phenomena (see pp. 410–414).

Motivation and Perception

Freud's ideas are hard to evaluate. That is because they were developed to explain some terribly complicated cases of human irrationality.

But perhaps motivational influences on cognition can be demonstrated under controlled laboratory conditions. These experiments deal with relatively simple phenomena, and they take us a long way from complex human irrationalities like neurotic symptoms. With simpler cases, however, we have a better chance of seeing what is going on. If motives can be shown to influence simple perceptions, we could study how they do so, and then work up to more complex cases.

The Better the Bigger?

An early and influential study was conducted by Jerome Bruner and his co-workers.[33] They asked children to adjust the size of a spot of light until it matched the size of a coin (for some children) or of a cardboard disk the same size as the coin (for other children). The matches showed that the coins were seen as larger than the discs. Moreover, the effect increased with the value of the coin. And it was greater in children from impoverished homes, who presumably valued the coins more. Value of the stimulus, in other words, increased its perceived size. The better the bigger, it seems!

Such effects are small and not everyone has been able to produce them, but on balance the evidence is that such distortions do occur.[34] It is a delightful literature. Children have been found to draw larger pictures of Santa Claus, but not of more neutral objects, as Christmas approaches. And before the election of 1960, between John F. Kennedy and Richard M. Nixon, more Kennedy supporters than Nixon supporters judged Kennedy to be the taller of the two—which he was, by half an inch.

In short, there may be a kind of perceptual exaggeration of stimuli that are important to us. It may serve to make them more noticeable, increasing their availability as cues.

Perceptual Defense

Freud saw the person as actively pushing threatening memories and thoughts out of consciousness. If so, is there a similar gatekeeping operation on the input side? Can we refuse not only to remember threatening material, but also to perceive it in the first place?

[33]Bruner and Goodman, 1947.
[34]See Baker, Rierdan, and Wapner, 1974; Matlin and Stang, 1978.

There is a large literature on this topic, asking, for example, whether subjects take longer to recognize nasty words than nice words when these are presented briefly. Some writers believe that such *perceptual defense* does occur[35]; but if so, the effect is very small and unreliable.

On the other hand, perhaps the notion of *perception* is being used too restrictively here.[36] After all, if we want not to perceive something unpleasant we can just close our eyes, as people sometimes do during horror movies. Or we can refuse to go to horror movies in the first place.

Do people avoid exposing themselves to unpleasant stimuli? Some laboratory experiments have found this effect. People have been found to spend less time looking at threatening pictures (a fist thrust toward a face, for instance) than at non-threatening ones.[37]

The trouble is that the information in such experiments, as with horror movies, is of no importance to the subject. Do we reject unpleasant information when it matters? Unfortunately there is no simple answer here either. It depends on what the information is *for.* And salient or surprising information may grab our attention even if it is unpleasant. We are biased to notice what is *interesting,* more than to notice what is *nice.*

One interesting idea, however, may help bring some order to this area. There may be important individual differences in the use of such defenses.[38] Some people, it has been claimed, are *repressors,* who avoid criticism, avoid thinking about the initial symptoms of illness, and are likely to forget information that contradicts their attitudes. Others are *sensitizers,* who are vigilant in noticing threats, dangers, and challenges to their beliefs. Similar differences have been noticed among surgical patients: Some seek, and others avoid, knowledge about what to expect.[39] Perhaps it is only some individuals who consistently refuse to confront the unpleasant side of life.

Motivation and Memory

As we move away from what is directly in front of us, motivational influences become more visible. The evidence that we remember pleasant events better than unpleasant ones is quite strong.*

The Positive Bias: The Pollyanna Principle

In one study,[40] the experimenter had subjects keep diaries of events for a week, rating events for intensity of happiness or unhappiness. A week later, subjects recalled the events and rated them again. Subjects remem-

[35]See Erdelyi, 1974; Matlin and Stang, 1978.
[36]Erdelyi, 1974.
[37]Luborsky, Blinder, and Mackworth, 1963.
[38]Byrne, 1964; Olson and Zanna, 1979; Zanna and Olson, 1982.
[39]Baun and Singer, 1982.
*There are exceptions (p. 510). The picture is complicated too by effects of *mood* on memory: If we are feeling sad to begin with, sad memories may be easier to recall than happy ones (see Bower, 1981; Bower et al., 1982).
[40]Holmes, 1970.

bered more of the positive than the negative events. And the memories showed lower intensity ratings for both kinds of events, but the effect was much greater for unhappy items. In other words, nice events seemed a little less nice, but nasty events seemed much less nasty, in retrospect than they had at the time they occurred.

Subjects are also likely to recall more pleasant than unpleasant words in a word-association task. And they emit the pleasant words earlier and faster.[41] In a word, nice things come to mind more easily than nasty things. This is the *Pollyanna principle.*[42]

However, we may not need to posit a specific *motive* to accentuate the positive in memory.* Pleasant events may be remembered better than unpleasant ones simply because they are better rehearsed. In other words, we may have more practice at remembering the pleasant things that have happened to us, because we have called them to mind more often before. If so, motivational factors may affect not the mechanisms of memory per se, but how often we direct our memories toward pleasant events.

The Self-enhancing Bias

Besides biasing memory so that the world looks better, we may bias it so that *we* look better. It has been shown many times that we remember our successes better than our failures; and we are more likely to take responsibility for the successes we remember than for the failures we remember. In asking students to judge the validity of an examination, many writers have found a strong correlation between obtained grade and belief that the exam was an accurate measure.

We show a similar bias in whether or not we relate a remembered event to ourselves at all. Here, actual observations confirm folklore: Note the fortunes of the football team on Saturday, and listen to what is said on Monday. If the game went one way, people say *"We* won." If the other, it's *"They* lost."[43]

Pollyanna Predictions

Let us turn from the picking-up and retrieving of information to the use of information in making predictions and judging probabilities. Here we meet another form of the Pollyanna principle: If it's good, it's probable. If it's bad, it probably won't happen.

One experimenter[44] used a card-drawing game with school children, in which some of the cards were worth points and others not. The children

[41]See Matlin and Stang, 1978, for review.
[42]The term is from Matlin and Stang, 1978.
*Nor to eliminate the negative. If unpleasant thoughts are more easily forgotten then pleasant ones, we are tempted to draw an analogy to Freud's *repression.* The temptation should be resisted. Freud was talking about an active pushing of material out of mind as a defense against overwhelming anxiety, not a mere fading of memory for the unpleasant.
[43]Greenwald, 1980.
[44]Marks, 1951.

knew how many point cards were in each deck. Nevertheless, asked before each draw how likely it was that they would draw a point card, the children consistently overestimated the likelihood that the next draw would be a favorable one. In fact, a pleasant outcome that had an actual probability of 10 percent was predicted almost as often as an unpleasant event that had a probability of 90 percent! The results were similar with college students.[45]

Many people,* then, have objectively unjustified beliefs that good things are going to happen. Not only that—they may also have objectively unjustified beliefs that they can *make* good things happen. In a situation where events occurred irrespective of what the subjects did, subjects overestimated their degree of control over favorable outcomes, and underestimated their control over unfavorable ones.[46] "If it's good, I can make it happen," they seemed to say; and "If it's bad, it's not my fault."

Similarly, a belief that we can make good things happen in social interactions—that people respond favorably to us—may be stronger than the facts warrant. One study[47] compared people's ratings of themselves with other people's ratings of them, after a group interaction. The subjects tended to rate themselves higher than they were rated by others. They had unrealistically high conceptions of their own social competence.

The Pollyanna principle in memory and prediction leads to a pervasive optimism, at least in this society. The average person believes he will live longer than average.[48] He believes he is less likely than average to have an accident. Indeed, even if we carefully ask people to compare themselves only with other people in similar circumstances, the average person thinks he is better off than average![49]

Is this a *motivated* distortion in cognition? Maybe. The cancer patients Taylor worked with would compare themselves with patients who were worse off than they were, as if actively *selecting* a basis of comparison that made their own case look not so bad:

> [S]everal women with lumpectomies compared themselves favorably to women with mastectomies; no woman with a mastectomy ever evaluated herself against a woman with a lumpectomy. Older women considered themselves better off than younger women; no younger woman expressed the wish that she had been older.[50]

Then too, the vast majority of Taylor's cancer patients believed that they, or their doctor, had some control over the course of their disease. Once again, the spouses' beliefs in the controllability of the cancer were

[45]Irwin, 1953.
*I say "many people" here, because there are some intriguing exceptions to all this (see Chapter 14).
[46]Alloy and Abramson, 1979.
[47]Lewinsohn, Mischel, Chaplin, and Barton, 1980.
[48]Slovic et al, 1982.
[49]Matlin and Stang, 1978.
[50]Taylor, 1983.

less strong, suggesting that such beliefs were actively constructed by the patient and not just picked up from our culture's folklore.

The Price of Pollyanna

Then there is the dark side of the Pollyanna principle: If it's bad, it's unlikely. A study of women with unwanted pregnancies revealed a distressing amount of ignorance on the women's part, but also a distressing amount of Pollyanna. The most common reason given for the pregnancy was "I thought it was during the safe period" (35 percent); but 27 percent said, "I thought it couldn't happen to me."[51]

The Pollyanna principle might underlie many tragedies. Consider how a person will drive, for instance, when he *knows* he has had too much to drink. He risks terrible consequences—a fatal collision, or hitting a child. Question: Do we do these things, not in spite of the risks, but *because* of them? Maybe the Pollyanna principle makes us discount their likelihood: "That would be so terrible that it must be very unlikely." Think about it.

A Look Backward: Why Pollyanna?

The Pollyanna principle does, on the face of it, lead to irrational beliefs. If people on the average think they're better off than average, then it's just a cold fact of arithmetic that people on the average are mistaken.

Why does this happen? It is especially puzzling because, in general, wishful thinking is not good thinking. A mouse might be displeased by the sight of a hawk, but mice that refused to acknowledge hawks would leave few grandchildren.

On the other hand, it may be to an actor's advantage to be *optimistic when in doubt*—which is not the same thing as being foolhardy when disaster is certain. Cold clear judgment is not always optimal. Perhaps it is just as well if the bride and groom on their wedding day do *not* have it clearly in mind that their odds of divorce are about even. And Taylor notes that her cancer patients seemed to function better if they had even an illusory sense of control.[52]

Maybe, in order to function at all, we must discount the probability of bad outcomes. That may be a pre-requisite for perseverance and risk-taking, which in turn is prerequisite for effective action. survival, and progeny payoffs.

Two Cautions

We have reviewed some ways in which our cognitive information processing may be distorted by our motives. But before we conclude that our mind is the servant rather than the partner of our emotions—that we

[51]Reported by Petit, 1975.
[52]Taylor, 1983.

remember and believe what we want to remember and believe—two words of caution are appropriate.

Are These Really Motivational Distortions?

We noted earlier that motivational and cognitive influences are not that easy to separate. The problem applies to the studies just reviewed. What look like motivational effects on memory and judgment can be interpreted in other ways instead.

Take the self-enhancing bias, for instance. It has been demonstrated countless times that we are likely to attribute successes to our own characteristics ("it was my ability or hard work or virtue"), and our failures to the situation ("it was bad luck or accident or someone else's fault"). But does this necessarily reflect a *motivated* distortion? We might see it instead as relating what happens to a causal *theory,* a theory that in most cases is quite accurate. After all, our achievements usually *are* produced by our own efforts, and failures usually *are* the result of external circumstances that thwart us. How often do we try to make bad things happen?[53]

We can have similar reservations about the Pollyanna principle. For instance, we saw earlier that people tend to rate themselves higher in social competence than others rate them. If you and I meet, I am likely to think that you are more impressed with me than in fact you are. But is that distorted perception on my part? Or is it a reasonable conclusion, based on the information you provide? As a courteous person, you will avoid hurting my feelings; you will listen politely even if I bore you; you will express your positive feelings toward me and keep your negative feelings to yourself. Why shouldn't I conclude that you are positively impressed with me if you send me signals to that effect?

Or consider the fact that the average driver considers herself a better-than-average driver. On the face of it, that's distorted thinking. But is it —or does it simply reflect a bias in the *information* such judgments are based on?

> Despite driving too fast, tailgating, etc., poor drivers make trip after trip without mishap. This personal experience demonstrates to them their exceptional skill and safety. Moreover, their indirect experience via the news media shows them that when accidents happen, they happen to others.[54]

In other words, what is most readily *available* in memory is (1) the many miles we have driven without incident, and (2) the accidents we have heard or read about—that happened to others.

It comes down to this: Self-serving distortions may occur because of the biased information we receive, not because our thinking is swamped by

[53]See Ross, 1977.
[54]Slovic, Fischhoff, and Lichtenstein, 1982, p. 470.

our feelings. Which cases reflect which process? The matter remains controversial.[55]

The Other Side of the Coin

One other caution to keep in mind: Clearly, we do not *always* flatter ourselves in thought and memory. In fact, we may work hard on occasion to defend *negative* image of ourselves. Consider some examples:

1. What about the student who persists in the belief that she "can't do mathematics," despite clear evidence to the contrary? It is not obvious that there is any food for self-esteem in math anxiety.
2. Obesity is a negatively valued trait in our society. People put down fat people; even other fat people do. If we always bent our beliefs in the direction of self-esteem, then we ought to deny being fat even if we are. Quite the contrary: The number of people (especially women) who think they are overweight is *much* greater than the number who, by objective standards, really are.[56]
3. Think about this[57]:

> [C]onsider the plight of a person who has persuaded a visiting relative to take a later flight than originally planned so that they could enjoy a relaxed dinner beforehand. The relative agrees, takes the later flight, and . . . dies in a horrible crash. Inevitably, the grieving survivor would express guilt and anguished self-castigation over "causing" the death. This would not be surprising . . .

But what if someone else—a neighbor, say—were to blame the survivor for "causing" the death? "We would label him a fool or a madman." And yet we think it reasonable, we even empathize, when the survivor accepts a *clearly irrational and sharply negative self-attribution*—"It was my fault," when obviously it wasn't.

So it is clear that the question is not: Are cognitions self-serving? Rather it is: *When* are cognitions self-serving? Which ones? And why?

COGNITIONS HOT AND COLD

Throughout this chapter, we have referred to the problem of separating motivational and cognitive influences on thought and action—what we want on the one hand, and how we think on the other. What roles do our "hot" passions, desires, and urges play, as opposed to our "cold" beliefs, predictions, and attributions? It is time to focus directly on that problem.

We will take two case studies. First, we will contrast two approaches to the topic of *prejudice.* Then we will look again at Freud's theory—the prototype of a "hot" motivational theory. We will see how "cold" cognitive

[55]For discussion see Nisbett and Ross, 1980; Fiske and Taylor, 1984; Snyder et al., 1983.
[56]See Polivy and Herman, 1983.
[57]Nisbett and Ross, 1980, p. 289.

operations might account for some of the same phenomena in a quite different way.

Prejudice: Hearts or Heads?

Most theories of *prejudice* take for granted that motivational urges—"hot" angers, hatreds, and fears—underly it. Marxists point out that we benefit economically by keeping whole groups of people disadvantaged. Popular writers on ethology may refer it to fear of the strange or the different. And Freudians are likely to see it as a redirection of our frustrated anger, toward a target we can attack without guilt.

Cognitive theorists are having second thoughts about such explanations. As they see it, prejudice may not reflect the effects of "hot" passions so much as the "cold" operation of the mechanisms we have considered: heuristics, schemata, and cognitive conservatism.[58]

If a bigoted person believes that blacks are stupid and lazy or that Jews are clannish and grasping, it is usually because someone told him so. The "information" probably comes from the same sources as most other information—what others tell us. And, once formed, such beliefs can survive contrary data, or persist in the face of no data at all—but so can other schemata, passionless ones like "I can't do mathematics." Perhaps, once a negative stereotype of some group is picked up from the culture, it is perpetuated in the same way as other schemata are, and is just as stubborn in resisting change—no less and no more, and for the same reasons.

Once such a schema is accepted, it can guide further information processing just as any other schema does:

> The adult black, observed sitting on a park bench at 3 PM on a Wednesday [is assumed to] be unemployed, lazy, and probably on welfare, whereas a white observed in similar circumstances . . . [is assumed to be] enjoying a day off, relaxing before beginning work on the night shift, or even as being the innocent victim of recession layoffs.[59]

In such a case, those assumptions may not be driven by "hot" anger or hatred toward blacks. The bigoted person may make the assumptions "coldly," simply because they fit his preconceptions. If he does feel anger, the anger may be a result of the assumption, not its cause.

Such a schema can lead to *self-fulfilling prophecies* which further support the schema:

> The willing worker denied a job because of a stereotype suggesting he will be lazy becomes a prime candidate for the park bench and therefore a seeming justification for the stereotype that helped to place him there.[60]

[58]For discussion see Nisbett and Ross, 1980.
[59]Nisbett and Ross, 1980, p. 240.
[60]Ibid., pp. 240–241.

Finally, we act on these beliefs just as we act on others. They may appear to justify acts of unfairness or viciousness. And once such acts have occurred, the original negative schema may be further bolstered by *blaming the victim* (pp. 397–398)—a cognitive-dissonance phenomenon.

In short, racial, religious, or ethnic prejudice *might* be an expression, not of "hot" anger or greed or fear, but of the way our "cold" cognitions operate.

Now that idea requires a major realignment of our thinking. Prejudice has been responsible for unspeakable atrocities—murders, lynchings, pogroms, wars. How can it reflect anything *but* hatred and rage? No other causes seem to fit the effects.

But why must causes resemble effects? Do we *assume* that hostile and violent behavior must have hostile and violent motives? If so, are we falling prey to the representativeness heuristic? Some writers think so.

Representativeness comes in in another way, too. When offered the idea that prejudice and its effects could come from cold cognitive sources, many people are incensed. It's as if such an explanation made excuses for bigots, or invited us to think of prejudice as somehow less bad.

But that's the representativeness heuristic again! It assumes that effects should resemble their causes. Bad effects should have bad causes; vicious behavior should have a vicious cause. And, if we say that prejudice may result from cognitive operations that are not bad in themselves, we seem to be saying that prejudice itself is not such a bad thing.

No. That is not what cognitive writers are saying. Their analysis does *not* make prejudice any more tolerable or any less severe a social problem. It does, however, suggest that there may be ways of combating it that would be more effective than trying to provide psychotherapy for all the bigots there are. It implies that we must try to teach clearer thinking, not to redirect the passions. That may make our prospects of success a little better.

Psychodynamics or Psychologic?

Freud, as we have seen, attributed distorted thinking and distorted behavior to the operation of "hot" instinctual pressures, including the heat of anxiety that signals real or imagined dangers. However, some of the cognitive complexities we've considered offer quite different explanations.

As an example, let's look again at *projection.* In a neat experimental demonstration,[61] male college students were recruited for an experiment in which, they were told, they were to be assigned a blind date. Some of the men were given sexually-arousing material to read while waiting for the experiment to begin. Other men were controls, given non-arousing material. Then each man was shown a picture and a description of an attractive woman whom, he was told, he was about to date.

[61]Stephan, Berscheid, and Walster, 1971.

Sure enough, the sexually-aroused men rated the woman more attractive. But they also rated her more uninhibited, amorous, and sexually available than non-aroused men did.

Now on the face of it, this is distorted thinking. It is illogical for a man to infer that a woman is sexually available just because *he* is aroused. A Freudian interpretation would be: The men's sexual arousal produced unconscious guilt feelings, and so, rather than recognize the arousal in themselves, they projected it onto the woman.

But there is another possibility. If the men were sexually motivated, that should call to mind the images of women who would provide gratification. The *schema*—attractive, sexy woman—was cognitively available. And here is a woman who partly fits the schema—she is an attractive woman. The subjects may have applied the more detailed schema—attractive *and* sexy woman—to her, simply because that schema was on their minds.

We spoke a while ago about *schema-triggered affect* (see p. 383). It is tempting to regard this experiment as an instance of *affect-triggered schema!* Sexual arousal made the schema available, and it was applied to the woman because it was available.

The important thing to see is that this account makes no appeal to unconscious forces, urges, or anxieties. It is a *motivational* theory at all, only in that it speaks of sexy feelings bringing images to mind. Beyond that, it is a theory about how our thought processes work—not about how motives affect thinking.

Or consider *reaction formation.* Consider a person who proclaims loudly and repeatedly that he loves his children, while treating them indifferently or angrily. Freud would say that his indifference or hostility is actively pushed down into the unconscious, and disguised as its opposite. But look at it a different way. We recall from Bem's theory (pp. 399–400) that we must often infer from our own behavior what our attitudes are. And the actor knows that one is *supposed* to love one's children (see *feeling rules,* Chapter 12). Might he be trying to provide behavioral evidence for himself, evidence that allows him to infer that he really is feeling as he ought to feel? If so, he may be doing this not to mask unconscious indifference, but to make his self-perceptions fit the father-schema he has been taught by his culture.

Then there is *repression.* This, the cornerstone of psychoanalytic theory, also has an ambiguous status. Forgetting of important and traumatic events occurs, but it may not occur because an active suppressing force pushes the material from consciousness. Here is an example of the evidence that leads us to look beyond Freud:

In 1968, presidential candidate Robert Kennedy was shot to death by a man named Sirhan Sirhan. After that:

> Sirhan had absolutely no recollection of the actual murder . . . Sirhan carried out the deed in a *greatly agitated state* and was completely amnesiac with regard to the event. . . . Under hypnosis, as Sirhan

became progressively more *worked up and excited,* he recalled progressively more, the memories tumbling out while his excitement built to a crescendo leading up to the shooting.[62]

Now it is most unlikely that the memory of the murder caused intolerable guilt in Sirhan. The murder was political and was planned in advance. It is much more likely that the amnesia is an instance of **state-dependent memory**. This is a well-documented phenomenon: Events that happened during one psychological state—here, a state of high arousal—are best remembered when one is put back in the same state, as Sirhan was under hypnosis. Perhaps many of the highly traumatic events Freud's patients recalled, which were forgotten in everyday life, were of that kind.

We cannot pursue this topic, for it is not really a motivational one.[63] But that is the point! "Repression" may not be *motivated* forgetting at all, but in some cases may reflect the *cognitive* phenomenon of state-dependent memory.

A Look Backward: Motives or Machinery?

There we have the controversy. Do our irrationalities reflect active, distorting motivational forces—*psychodynamics?* Or do they reflect the quiet operation of our cognitive machinery, which follows rules that are not always quite rational—*psychologic?* Do they show motivational intrusions on our thinking, or do they only reveal the way our thinking works? Or is it sometimes one and sometimes the other? We are not yet sure, and it is risky to prejudge the matter.

Most important for our purposes, here is yet another case in which theories that at first seem worlds apart are finding that they have things to say to each other. Psychoanalysis comes from the clinic, and the study of neurotic disorders. Cognitive psychology comes from the laboratory, and the study of perception and memory. Now they are addressing the same phenomena, each in its own way, and new links are being forged between them.

SUMMARY

Expected utilities are affected by motivational factors—our *utilities;* and by cognitive factors—our *beliefs.* A discussion of motivated behavior must therefore consider where our beliefs come from. This is especially true because cognitive and motivational factors can easily be confused with each another. Sexual assault may look like an expression of sexual *motivation,* whereas it may actually reflect a false set of *beliefs.*

Where do beliefs come from? Rationally, we might expect them to

[62]Bower, 1981, p. 129; my italics.
[63]See Bower, 1981.

come from careful examination of the data. *Attribution theory* presents a theory of how we might gather and use information to attribute causes to people's actions. The theory says that we use information about *consensus* (do other people act in that way?), *consistency* (does this person consistently act that way in this situation?), and *distinctiveness* (does the person act that way in other situations or toward other targets)? Armed with that information, we decide such questions as: Did the action result from something about the actor—an *internal* attribution—or something about the situation—an *external* attribution?

But we probably do not often form beliefs in such a rational way. As with rational decision-making, it takes too much effort in trivial cases and too much time in emergencies. So we depend on cognitive time- and labor-savers in forming beliefs. Among these are *heuristics* or rules of thumb. There is the *availability heuristic:* "Use the information most readily available in memory." There is the *representativeness heuristic:* "Similar things go together." These rules usually permit us to get by well enough, but they can also lead to serious errors.

Another cognitive shortcut is the use of *schemata*—what we already know or believe. Schemata provide us with valuable information, but when our preconceptions lead us to ignore the facts or the need for facts —schema-driven inference—we can make serious blunders.

Heuristic and schematic thinking affect what alternatives occur to us and what ideas come to mind; they are therefore related to the *framing* problem. And they may help us understand the pigeon/poker paradox. Most of us, most of the time, depend more on habit and hunch than on rational calculation. Heuristics and schemata may be important sources of habits and hunches.

The tendency to perceive the world as orderly, coherent, and relatively simple, seems to reflect a motive in its own right—the *cognitive coherence* motive. To achieve the goal of a coherent view of the world, we do cognitive work—rewriting our memories, or actively seeking causes for important events. We seem to take whatever means is available to achieve this end. This we know to be characteristic of motivated action, and here we see it in cognitive action.

In addition to keeping our world-view simple, we do cognitive work to keep it stable, and so we may resist changing our minds, even in the face of the evidence *(cognitive conservatism).* We may defend our preconceptions in a number of ways: failing to notice contrary evidence; finding an explanation that fits it into our preconceptions; not allowing contrary data to arise (the self-fulfilling prophesy), or simply by not relating the data to the preconception at all (wooden-headedness).

Preferences and values affect actions, but they can also be affected by them. *Cognitive dissonance* arises when an action we have already taken is seen as inconsistent with our own values. If we can't change the action, we may remove the dissonance by changing the values. A person who has mistreated a victim may decide that the victim must deserve it—and mistreat him some more. Having committed ourselves to a course of

action, we may feel it inconsistent to back off from it—and so we commit ourselves further.

How cognitive dissonance works is uncertain. One view is that dissonance is uncomfortable, and we reduce the discomfort by reducing the dissonance. But another is that we do not really change our values because of our behavior; rather, we infer from our behavior what our values must be. The latter is a cognitive, not a motivational, interpretation of dissonance phenomena.

Do motives distort perception, memory, and judgment? Freud thought so, and his *defense mechanisms*—such as repression, reaction formation, and projection—are such distortions, produced by the attempt to reduce anxiety associated with dangerous wishes. Experimental demonstrations have given inconsistent results as regards perception. In memory, the evidence is stronger that we remember the good better than the bad, and remember the bad as less bad. And in prediction, the evidence for a *Pollyanna principle* is very strong: We tend to believe, whatever the facts, that good things are likely, that bad things are unlikely, and that we can make good things happen. This mechanism could lead us to take dangerous risks, precisely because of the danger; if a possible outcome would be very bad, its badness may lead us to discount its likelihood.

Since motivational and cognitive factors are so easily confused with each other, modern writers are wondering whether some processes that *look* motivated ("hot") might instead simply reflect the way our thought processes operate ("cold"). Prejudice can lead to hostile and violent behavior, but it may not reflect hostile and violent motives. It may simply reflect a false set of beliefs, operating as any other beliefs would. Cognitive explanations for Freud's defense mechanisms are possible, too. Forgetting a traumatic memory may reflect, not a motive to forget as in Freud's repression, but a cognitive mechanism—state-dependent memory. Such theorizing is building new bridges between Freud's motivational theory and modern concepts in cognitive psychology.