

States. The US news media played this story for several weeks, interviewing many people—some experts, some not—on why the Soviet Union collapsed. Most serious students understood that there were many reasons for the Soviet collapse, the most important of which were internal problems caused by the nature of the Soviet system.

People and governments also tend to overestimate their own importance as the target of others' actions. They are sensitive to the impact that others' actions have on them, and they generally assume that people and governments intend to do what they do and intend it to have the effect that it has. They are much less aware of, and consequently tend to downgrade the importance of, other causes or results of the action.

In analyzing the reasons why others act the way they do, it is common to ask, "What goals are the person or government pursuing?" But goals are generally inferred from the effects of behavior, and the effects that are best known and often seem most important are the effects upon ourselves. Thus actions that hurt us are commonly interpreted as intentional expressions of hostility directed at ourselves. Of course, this will often be an accurate interpretation, but people sometimes fail to recognize that actions that seem directed at them are actually the unintended consequence of decisions made for other reasons.

Illusory Correlation

At the start of this chapter, covariation was cited as one basis for inferring causality. It was noted that covariation may either be observed intuitively or measured statistically. This section examines the extent to which the intuitive perception of covariation deviates from the statistical measurement of covariation.

Statistical measurement of covariation is known as correlation. Two events are correlated when the existence of one event implies the existence of the other. Variables are correlated when a change in one variable implies a similar degree of change in another. Correlation alone does not necessarily imply causation. For example, two events might co-occur because they have a common cause, rather than because one causes the other. But when two events or changes do co-occur, and the time sequence is such that one always follows the other, people often infer that the first caused the second. Thus, inaccurate perception of correlation leads to inaccurate perception of cause and effect.

Judgments about correlation are fundamental to all intelligence analysis. For example, assumptions that worsening economic conditions lead to increased political support for an opposition party, that domestic problems may lead to foreign adventurism, that military government leads to unraveling of democratic institutions, or that negotiations are more successful when conducted from a position of strength are all based on intuitive judgments of correlation between these variables. In many cases these assumptions are correct, but they are seldom tested by systematic observation and statistical analysis.

Much intelligence analysis is based on common-sense assumptions about how people and governments normally behave. The problem is that people possess a great facility for invoking contradictory "laws" of behavior to explain, predict, or justify different actions occurring under similar circumstances. "Haste makes waste" and "He who hesitates is lost" are examples of inconsistent explanations and admonitions. They make great sense when used alone and leave us looking foolish when presented together. "Appeasement invites aggression" and "agreement is based upon compromise" are similarly contradictory expressions.

When confronted with such apparent contradictions, the natural defense is that "it all depends on. . . ." Recognizing the need for such qualifying statements is one of the differences between subconscious information processing and systematic, self-conscious analysis. Knowledgeable analysis might be identified by the ability to fill in the qualification; careful analysis by the frequency with which one remembers to do so.¹²⁸

Illusory correlation occurs when people perceive a relationship that does not in fact exist. In looking at a series of cases, it seems that people often focus on instances that support the existence of a relationship but ignore those cases that fail to support it. Several experiments have demonstrated that people do not have an intuitive understanding of what information is really needed to assess the relationship between two events or two variables. There appears to be nothing in people's intuitive understanding that corresponds with the statistical concept of correlation.

Nurses were tested on their ability to learn through experience to judge the relationship, or correlation, between a symptom and the di-

128. This paragraph draws heavily from the ideas and phraseology of Baruch Fischhoff. "For Those Condemned to Study the Past: Reflections on Historical Judgment," in R. A. Sweder and D. W. Fiske, eds., *New Directions for Methodology of Behavioral Science: Fallible Judgment in Behavioral Research* (San Francisco: Jossey-Bass, 1980).

agnosis of illness.¹²⁹ The nurses were each shown 100 cards; every card ostensibly represented one patient. The cards had a row of four letters at the top representing various symptoms and another row of four letters at the bottom representing diagnoses. The nurses were instructed to focus on just one letter (A) representing one symptom and one letter (F) representing one diagnosis, and then to judge whether the symptom A was related to the diagnosis F. In other words, on the basis of experience with these 100 "patients," does the presence of symptom A help to diagnose the presence of illness F? The experiment was run a number of times using different degrees of relationship between A and F.

Put yourself briefly in the position of a test subject. You have gone through the cards and noticed that on about 25 of them, or a quarter of the cases, the symptom and the disease, A and F, are both present. Would you say there is a relationship? Why? Is it appropriate to make a judgment solely on the basis of the frequency of cases which support the hypothesis of a relationship between A and F? What else do you need to know? Would it be helpful to have the number of cases in which the symptom (A) was present without the disease (F)? Let us say this was also true on 25 cards, so that out of the 100 cards, 50 had A and 25 of those cards with A also had F. In other words, the disease was present in half the cases in which the symptom was observed. Is this sufficient to establish a relationship, or is it also necessary to know the number of times the disease was present without the symptom?

Actually, to determine the existence of such a relationship, one needs information to fill all four cells of a 2 x 2 contingency table. Figure 16 shows such a table for one test run of this experiment. The table shows the number of cases of patients having each of four possible combinations of symptom and disease.

Eighteen of 19 test subjects given the 100 cards representing this particular combination of A and F thought there was at least a weak relationship, and several thought there was a strong relationship, when in fact, there is no correlation at all. More than half the test subjects based their judgment solely on the frequency of cases in which both A and F were present. This is the upper left cell of the table. These subjects were trying to determine if there was a relationship between A and F. When looking through the cards, 25 percent of the cases they looked at were

In estimating the influence of US policy on the actions of another government, analysts more often than not will be knowledgeable of US actions and what they are intended to achieve, but in many instances they will be less well informed concerning the internal processes, political pressures, policy conflicts, and other influences on the decision of the target government.

This bias may have played a role in the recent US failure to anticipate Indian nuclear weapons testing even though the new Indian Government was elected partly on promises it would add nuclear weapons to India's military arsenal. Most US intelligence analysts apparently discounted the promises as campaign rhetoric, believing that India would be dissuaded from joining the nuclear club by economic sanctions and diplomatic pressure. Analysts overestimated the ability of US policy to influence Indian decisions.

When another country's actions are consistent with US desires, the most obvious explanation, in the absence of strong evidence to the contrary, is that US policy effectively influenced the decision.¹²⁷ Conversely, when another country behaves in an undesired manner, this is normally attributed to factors beyond US control. People and governments seldom consider the possibility that their own actions have had unintended consequences. They assume that their intentions have been correctly perceived and that actions will have the desired effect unless frustrated by external causes.

Many surveys and laboratory experiments have shown that people generally perceive their own actions as the cause of their successes but not of their failures. When children or students or workers perform well, their parents, teachers, or supervisors take at least part of the credit; when they do poorly, their mentors seldom assume any blame. Successful candidates for Congress generally believe their own behavior contributed strongly to their victory, while unsuccessful candidates blame defeat on factors beyond their control.

Another example is the chest thumping that some Americans engaged in after the fall of the Soviet Union. According to some, the demise of the USSR was caused by strong US policies, such as increased defense expenditures and the Strategic Defense Initiative, which caused Soviet leaders to realize they could no longer compete with the United

129, Jan Smedslund, "The Concept of Correlation in Adults," *Scandinavian Journal of Psychology* Vol. 4 (1963), 165-73.

127. It follows from the same reasoning that we may underestimate the consequences of our actions on nations that are not the intended target of our influence.

preference for peace. Egypt, however, explains Israel's compromises regarding, for example, Sinai, as resulting from external pressures such as positive inducements and threats of negative sanctions by the United States. In addition, some Egyptians attribute Israel's undesirable behavior, such as establishment of Jewish settlements on the West Bank of the Jordan River, as stemming from Zionist expansionism. If Israel should not place settlements in that territory, Egyptians might account for such desirable behavior as being due to external constraints, such as Western condemnation of settlements. Israelis, on the other hand explain undesirable behavior, such as Egypt's past tendency to issue threats to drive them into the sea, as resulting from Egypt's inherent opposition to a Jewish state in the Middle East. When Egyptians ceased to make such threats, Israelis attributed this desirable behavior as emanating from external circumstances, such as Israel's relative military superiority.¹²⁵

The persistent tendency to attribute cause and effect in this manner is not simply the consequence of self-interest or propaganda by the opposing sides. Rather, it is the readily understandable and predictable result of how people normally attribute causality under many different circumstances.

As a general rule, biased attribution of causality helps sow the seeds of mistrust and misunderstanding between people and between governments. We tend to have quite different perceptions of the causes of each other's behavior.

Overestimating Our Own Importance

Individuals and governments tend to overestimate the extent to which they successfully influence the behavior of others.¹²⁶ This is an exception to the previously noted generalization that observers attribute the behavior of others to the nature of the actor. It occurs largely because a person is so familiar with his or her own efforts to influence another, but much less well informed about other factors that may have influenced the other's decision.

125. Raymond Tanzer, "Bounded Rationality and Decision Aids," essay prepared for the Strategies of Conflict seminar, Mont Pelerin, Switzerland, 11-16 May 1980.
126. This section draws heavily upon Jervis, Chapter 9.

Figure 16

	A	Not A
F	25	25
Not F	25	25

consistent with the belief that symptom and diagnosis were perfectly correlated; this appears to be a lot of evidence to support the hypothesized relationship. Another smaller group of test subjects used somewhat more sophisticated reasoning. They looked at the total number of A cases and then asked in how many of these cases F was also present. This is the left side of the table in Figure 16. A third group resisted the basic concept of making a statistical generalization. When asked to describe their reasoning, they said that sometimes a relationship was present while in other cases it was not.

Of the 86 test subjects involved in several runnings of this experiment, not a single one showed any intuitive understanding of the concept of correlation. That is, no one understood that to make a proper judgment about the existence of a relationship, one must have information on all four cells of the table. Statistical correlation in its most elementary form is based on the ratio of the sums of the frequencies in the diagonal cells of a 2 x 2 table. In other words, a predominance of entries along either diagonal represents a strong statistical relationship between the two variables.

Let us now consider a similar question of correlation on a topic of interest to intelligence analysis. What are the characteristics of strategic deception and how can analysts detect it? In studying deception, one of the important questions is: what are the correlates of deception? Historically, when analysts study instances of deception, what else do they see that goes along with it, that is somehow related to deception, and that might be interpreted as an indicator of deception? Are there certain practices relating to deception, or circumstances under which deception is most likely to occur, that permit one to say, that, because we have seen x or y or z, this most likely means a deception plan is under way? This would be comparable to a doctor observing certain symptoms and

concluding that a given disease may be present. This is essentially a problem of correlation. If one could identify several correlates of deception, this would significantly aid efforts to detect it.

The hypothesis has been advanced that deception is most likely when the stakes are exceptionally high.¹³⁰ If this hypothesis is correct, analysts should be especially alert for deception in such instances. One can cite prominent examples to support the hypothesis, such as Pearl Harbor, the Normandy landings, and the German invasion of the Soviet Union. It seems as though the hypothesis has considerable support, given that it is so easy to recall examples of high stakes situations in which deception was employed. But consider what it would take to prove, empirically, that such a relationship actually exists. Figure 17 sets up the problem as a 2 x 2 contingency table.

Figure 17

	High Stakes	Not High Stakes
Deception	68	?
No Deception	35	?

Barton Whaley researched 68 cases in which surprise or deception was present in strategic military operations between 1914 and 1968.¹³¹ Let us assume that some form of deception, as well as surprise, was present in all 68 cases and put this number in the upper left cell of the table. How many cases are there with high stakes when deception was not used? That is a lot harder to think about and to find out about; researchers seldom devote much effort to documenting negative cases, when something did not occur. Fortunately, Whaley did make a rough estimate that both deception and surprise were absent in one-third to one-half of the cases of “grand strategy” during this period, which is the basis for putting the number 35 in the lower left cell of Figure 17.

130. Robert Axelrod, “The Rational Timing of Surprise,” *World Politics*, XXXI (January 1979), pp. 228-246.

131. Barton Whaley, *Strategem: Deception and Surprise in War*, (Cambridge, MA: Massachusetts Institute of Technology, unpublished manuscript, 1969), p. 247.

Conversely, observers of the Soviet invasion would be inclined to attribute it to the aggressive and expansionist nature of the Soviet regime. Dislike of the Soviet Union and lack of information on the situational constraints as perceived by the Soviets themselves would be likely to exacerbate the attributional bias.¹²³ Further, to the extent that this bias stemmed from insufficient knowledge of situational pressures and constraints, one might expect policymakers who were not Soviet experts to have had a stronger bias than analysts specializing in the Soviet Union. With their greater base of information on the situational variables, the specialists may be better able to take these variables into account.

Specialists on occasion become so deeply immersed in the affairs of the country they are analyzing that they begin to assume the perspective—and the biases—of that country’s leaders. During the Cold War, there was a persistent difference between CIA specialists in Soviet affairs and specialists in Chinese affairs when dealing with Sino-Soviet relations. During border clashes in 1969, for example, specialists on the USSR argued that the Chinese were being “provocative.” These specialists tended to accept the Soviet regime’s versions as to the history and alignment of the border. Specialists in Chinese affairs tended to take the opposite view—that is, that the arrogant Russians were behaving like Russians often do, while the Chinese were simply reacting to the Soviet high-handedness.¹²⁴ In other words, the analysts assumed the same biased perspective as the leaders of the country about which they were most knowledgeable. An objective account of causal relationships might have been somewhere between these two positions.

The Egypt-Israel peace negotiations in 1978-1979 offered another example of apparent bias in causal attribution. In the words of one observer at the time:

Egyptians attribute their willingness to sign a treaty with Israel as due to their inherent disposition for peace; Israelis explain Egyptian willingness to make peace as resulting from a deteriorating economy and a growing awareness of Israel’s military superiority. On the other hand, Israelis attribute their own orientation for accommodation as being due to their ever-present

123. Edward Jones and Richard Nisbett, “The Actor and the Observer: Divergent Perceptions of Their Behavior,” in Edward Jones *et al.*, *Attribution: Perceiving the Causes of Behavior* (New Jersey: General Learning Press, 1971), p. 93.

124. Based on personal discussion with CIA analysts.

understood by other actors, and well designed to elicit a desired response. Indeed, an observer interacting with another actor sees himself as determining the situation to which the other actor responds. When the actor does not respond as expected, the logical inference is that the response was caused by the nature of the actor rather than by the nature of the situation.

Intelligence analysis is familiar with the problem of weighing internal versus external causes of behavior in a number of contexts. When a new leader assumes control of a foreign government, analysts assess the likely impact of changed leadership on government policy. For example, will the former Defense Minister who becomes Prime Minister continue to push for increases in the defense budget? Analysts weigh the known predispositions of the new Prime Minister, based on performance in previous positions, against the requirements of the situation that constrain the available options. If relatively complete information is available on the situational constraints, analysts may make an accurate judgment on such questions. Lacking such information, they tend to err on the side of assuming that the individual's personal predispositions will prompt continuation of past behavior.

Consider the Soviet invasion of Afghanistan. The Soviets' perception of their own behavior was undoubtedly very different from the American perception. Causal attribution theory suggests that Soviet leaders would see the invasion as a reaction to the imperatives of the situation in South Asia at that time, such as the threat of Islamic nationalism spreading from Iran and Afghanistan into the Soviet Union. Further, they would perceive US failure to understand their "legitimate" national interests as caused by fundamental US hostility.¹²²

122. See Richards J. Heuer, Jr., "Analyzing the Soviet Invasion of Afghanistan: Hypotheses from Causal Attribution Theory," *Studies in Comparative Communism*, Winter 1980. These comments concerning the Soviet invasion of Afghanistan are based solely on the results of psychological research, not on information concerning Soviet actions in Afghanistan or the US reaction thereto. The nature of generalizations concerning how people normally process information is that they apply "more or less" to many cases but may not offer a perfect fit to any single instance. There were obviously many other factors that influenced analysis of Soviet actions, including preconceptions concerning the driving forces behind Soviet policy. The intent is to illustrate the relevance of psychological research on the analytical process, not to debate the merits of alternative interpretations of Soviet policy. Thus I leave to the reader to judge how much his or her own interpretation of the Soviet invasion of Afghanistan may be influenced by these attributional tendencies.

How common is deception when the stakes are not high? This is the upper right cell of Figure 17. Entries for this cell and the lower right cell are difficult to estimate; they require defining a universe of cases that includes low-stakes situations. What is a low-stakes situation in this context? High-stakes situations are definable, but there is an almost infinite number and variety of low-stakes situations. Because of this difficulty, it may not be feasible to use the full 2 x 2 table to analyze the relationship between deception and high stakes.

Perhaps it is necessary to be content with only the left side of the Figure 17 table. But then we cannot demonstrate empirically that one should be more alert to deception in high-stakes situations, because there is no basis for comparing high-stakes and low-stakes cases. If deception is even more common in tactical situations than it is in high stakes strategic situations, then analysts should not be more inclined to suspect deception when the stakes are high.

It is not really clear whether there is a relationship between deception and high-stakes situations, because there are not enough data. Intuitively, your gut feeling may tell you there is, and this feeling may well be correct. But you may have this feeling mainly because you are inclined to focus only on those cases in the upper left cell that do suggest such a relationship. People tend to overlook cases where the relationship does not exist, inasmuch as these are much less salient.

The lesson to be learned is not that analysts should do a statistical analysis of every relationship. They usually will not have the data, time, or interest for that. But analysts should have a general understanding of what it takes to know whether a relationship exists. This understanding is definitely not a part of people's intuitive knowledge. It does not come naturally. It has to be learned. When dealing with such issues, analysts have to force themselves to think about all four cells of the table and the data that would be required to fill each cell.

Even if analysts follow these admonitions, there are several factors that distort judgment when one does not follow rigorous scientific procedures in making and recording observations. These are factors that influence a person's ability to recall examples that fit into the four cells. For example, people remember occurrences more readily than non-occurrences. "History is, by and large, a record of what people did, not what they failed to do."¹³²

132. E. H. Carr, *What is History?* (London: Macmillan, 1961), p. 126, cited by Fischhoff, *op. cit.*

Thus, instances in which deception occurred are easier to recall than instances in which it did not. Analysis remember occurrences that support the relationship they are examining better than those that do not. To the extent that perception is influenced by expectations, analysts may have missed or discounted the contrary instances. People also have a better memory for recent events, events in which they were personally involved, events that had important consequences, and so forth. These factors have a significant influence on perceptions of correlation when analysts make a gut judgment without consciously trying to think of all four cells of the table.

Many erroneous theories are perpetuated because they seem plausible and because people record their experience in a way that supports rather than refutes them. Ross describes this process as follows:

. . . the intuitive observer selectively codes those data potentially relevant to the relationship between X and Y. Data points that fit his hypotheses and predictions are accepted as reliable, valid, representative, and free of error or "third-variable influences." Such data points are seen as reflective of the "real" . . . relationship between X and Y. By contrast, data points that deviate markedly from the intuitive . . . expectations or theory are unlikely to be given great weight and tend to be dismissed as unreliable, erroneous, unrepresentative, or the product of contaminating third-variable influences. Thus the intuitive scientist who believes that fat men are jolly, or more specifically that fatness causes jolliness, will see particular fat and jolly men as strong evidence for this theory; he will not entertain the hypothesis that an individual's jolliness is mere pretense or the product of a particularly happy home life rather than obesity. By contrast, fat and morose individuals will be examined very carefully before gaining admission to that scientist's store of relevant data. He might, for instance, seek to determine whether the individual's moroseness on the day in question is atypical, or the result of a nagging cold or a disappointing day, rather than the reflection of some stable attribute. It need hardly be emphasized that even a randomly generated [set of data] can yield a relatively high correlation if coded in the manner just outlined.¹³³

clined to infer that the behavior was caused by broad personal qualities or dispositions of the other person and to expect that these same inherent qualities will determine the actor's behavior under other circumstances. Not enough weight is assigned to external circumstances that may have influenced the other person's choice of behavior. This pervasive tendency has been demonstrated in many experiments under quite diverse circumstances¹¹⁸ and has often been observed in diplomatic and military interactions.¹¹⁹

Susceptibility to this biased attribution of causality depends upon whether people are examining their own behavior or observing that of others. It is the behavior of others that people tend to attribute to the nature of the actor, whereas they see their own behavior as conditioned almost entirely by the situation in which they find themselves. This difference is explained largely by differences in information available to actors and observers. People know a lot more about themselves.

The actor has a detailed awareness of the history of his or her own actions under similar circumstances. In assessing the causes of our own behavior, we are likely to consider our previous behavior and focus on how it has been influenced by different situations. Thus situational variables become the basis for explaining our own behavior. This contrasts with the observer, who typically lacks this detailed knowledge of the other person's past behavior. The observer is inclined to focus on how the other person's behavior compares with the behavior of others under similar circumstances.¹²⁰ This difference in the type and amount of information available to actors and observers applies to governments as well as people.

An actor's personal involvement with the actions being observed enhances the likelihood of bias. "Where the observer is also an actor, he is likely to exaggerate the uniqueness and emphasize the dispositional origins of the responses of others to his own actions."¹²¹ This is because the observer assumes his or her own actions are unprovocative, clearly

118. Lee Ross, "The Intuitive Psychologist and his Shortcomings: Distortions in the Attribution Process," in Leonard Berkowitz, ed., *Advances in Experimental Social Psychology*, Volume 10 (New York: Academic Press, 1977), p. 184.

119. Jervis, *Ibid.*, Chapter 2.

120. Edward E. Jones, "How Do People Perceive the Causes of Behavior?" *American Scientist*, 64 (1976), p. 301.

121. Daniel Heradsveit, *The Arab-Israeli Conflict: Psychological Obstacles to Peace* (Oslo: Universitetsforlaget, 1979), p. 25.

from the effect it is alleged to explain, in the minds of many it fails to meet the criterion of a coherent narrative explanation. If such “little” causes as mistakes, accidents, or the aberrant behavior of a single individual have big effects, then the implication follows that major events happen for reasons that are senseless and random rather than by purposeful direction.

Intelligence analysts are more exposed than most people to hard evidence of real plots, coups, and conspiracies in the international arena. Despite this—or perhaps because of it—most intelligence analysts are not especially prone to what are generally regarded as conspiracy theories. Although analysts may not exhibit this bias in such extreme form, the bias presumably does influence analytical judgments in myriad little ways. In examining causal relationships, analysts generally construct causal explanations that are somehow commensurate with the magnitude of their effects and that attribute events to human purposes or predictable forces rather than to human weakness, confusion, or unintended consequences.

Internal vs. External Causes of Behavior

Much research into how people assess the causes of behavior employs a basic dichotomy between internal determinants and external determinants of human actions. Internal causes of behavior include a person’s attitudes, beliefs, and personality. External causes include incentives and constraints, role requirements, social pressures, or other forces over which the individual has little control. The research examines the circumstances under which people attribute behavior either to stable dispositions of the actor or to characteristics of the situation to which the actor responds.

Differences in judgments about what causes another person’s or government’s behavior affect how people respond to that behavior. How people respond to friendly or unfriendly actions by others may be quite different if they attribute the behavior to the nature of the person or government than if they see the behavior as resulting from situational constraints over which the person or government has little control.

A fundamental error made in judging the causes of behavior is to overestimate the role of internal factors and underestimate the role of external factors. When observing another’s behavior, people are too in-

Chapter 12

Biases in Estimating Probabilities

In making rough probability judgments, people commonly depend upon one of several simplified rules of thumb that greatly ease the burden of decision. Using the “availability” rule, people judge the probability of an event by the ease with which they can imagine relevant instances of similar events or the number of such events that they can easily remember. With the “anchoring” strategy, people pick some natural starting point for a first approximation and then adjust this figure based on the results of additional information or analysis. Typically, they do not adjust the initial judgment enough.

Expressions of probability, such as possible and probable, are a common source of ambiguity that make it easier for a reader to interpret a report as consistent with the reader’s own preconceptions. The probability of a scenario is often miscalculated. Data on “prior probabilities” are commonly ignored unless they illuminate causal relationships.

Availability Rule

One simplified rule of thumb commonly used in making probability estimates is known as the availability rule. In this context, “availability” refers to imaginability or retrievability from memory. Psychologists have shown that two cues people use unconsciously in judging the probability of an event are the ease with which they can imagine relevant instances of the event and the number or frequency of such events that they can easily remember.¹³⁴ People are using the availability rule of thumb whenever they estimate frequency or probability on the basis of how easily they can recall or imagine instances of whatever it is they are trying to estimate.

134. Amos Tversky and Daniel Kahneman, “Availability: A Heuristic for Judging Frequency and Probability,” *Cognitive Psychology*, 5 (1973), pp. 207–232.

Normally this works quite well. If one thing actually occurs more frequently than another and is therefore more probable, we probably can recall more instances of it. Events that are likely to occur usually are easier to imagine than unlikely events. People are constantly making inferences based on these assumptions. For example, we estimate our chances for promotion by recalling instances of promotion among our colleagues in similar positions and with similar experience. We estimate the probability that a politician will lose an election by imagining ways in which he may lose popular support.

Although this often works well, people are frequently led astray when the ease with which things come to mind is influenced by factors unrelated to their probability. The ability to recall instances of an event is influenced by how recently the event occurred, whether we were personally involved, whether there were vivid and memorable details associated with the event, and how important it seemed at the time. These and other factors that influence judgment are unrelated to the true probability of an event.

Consider two people who are smokers. One had a father who died of lung cancer, whereas the other does not know anyone who ever had lung cancer. The one whose father died of lung cancer will normally perceive a greater probability of adverse health consequences associated with smoking, even though one more case of lung cancer is statistically insignificant when weighing such risk. How about two CIA officers, one of whom knew Aldrich Ames and the other who did not personally know anyone who had ever turned out to be a traitor? Which one is likely to perceive the greatest risk of insider betrayal?

It was difficult to imagine the breakup of the Soviet Union because such an event was so foreign to our experience of the previous 50 years. How difficult is it now to imagine a return to a Communist regime in Russia? Not so difficult, in part because we still have vivid memories of the old Soviet Union. But is that a sound basis for estimating the likelihood of its happening? When analysts make quick, gut judgments without really analyzing the situation, they are likely to be influenced by the availability bias. The more a prospective scenario accords with one's experience, the easier it is to imagine and the more likely it seems.

Intelligence analysis may be less influenced than others by the availability bias. Analysts are evaluating all available information, not making quick and easy inferences. On the other hand, policymakers and journal-

similar to properties of the effect."¹¹⁴ Heavy things make heavy noises; dainty things move daintily; large animals leave large tracks. When dealing with physical properties, such inferences are generally correct.

People tend, however, to reason in the same way under circumstances when this inference is not valid. Thus, analysts tend to assume that economic events have primarily economic causes, that big events have important consequences, and that little events cannot affect the course of history. Such correspondence between cause and effect makes a more logical and persuasive—a more coherent—narrative, but there is little basis for expecting such inferences to correspond to historical fact.

Fischer labels the assumption that a cause must somehow resemble its effect the "fallacy of identity,"¹¹⁵ and he cites as an example the historiography of the Spanish Armada. Over a period of several centuries, historians have written of the important consequences of the English defeat of the Spanish Armada in 1588. After refuting each of these arguments, Fischer notes:

In short, it appears that the defeat of the Armada, mighty and melodramatic as it was, may have been remarkably barren of result. Its defeat may have caused very little, except the disruption of the Spanish strategy that sent it on its way. That judgment is sure to violate the patriotic instincts of every Englishman and the aesthetic sensibilities of us all. A big event *must* have big results, we think.¹¹⁶

The tendency to reason according to similarity of cause and effect is frequently found in conjunction with the previously noted bias toward inferring centralized direction. Together, they explain the persuasiveness of conspiracy theories. Such theories are invoked to explain large effects for which there do not otherwise appear to be correspondingly large causes. For example, it seems "... outrageous that a single, pathetic, weak figure like Lee Harvey Oswald should alter world history."¹¹⁷ Because the purported motive for the assassination of John Kennedy is so dissimilar

114. Harold H. Kelley, "The Processes of Causal Attribution," *American Psychologist* (February 1973), p. 121.

115. David Hackett Fischer, *Historians Fallacies* (New York: Harper Torchbooks, 1970), p. 177.

116. *Ibid.*, p. 167.

117. Richard E. Nisbett and Timothy DeC. Wilson, "Telling More Than We Can Know: Verbal Reports on Mental Processes," *Psychological Review* (May 1977), p. 252.

reaucratic entities, or following standard operating procedures under inappropriate circumstances.¹¹³ But a focus on such causes implies a disorderly world in which outcomes are determined more by chance than purpose. It is especially difficult to incorporate these random and usually unpredictable elements into a coherent narrative, because evidence is seldom available to document them on a timely basis. It is only in historical perspective, after memoirs are written and government documents released, that the full story becomes available.

This bias has important consequences. Assuming that a foreign government's actions result from a logical and centrally directed plan leads an analyst to:

- Have expectations regarding that government's actions that may not be fulfilled if the behavior is actually the product of shifting or inconsistent values, bureaucratic bargaining, or sheer confusion and blunder.
- Draw far-reaching but possibly unwarranted inferences from isolated statements or actions by government officials who may be acting on their own rather than on central direction.
- Overestimate the United States' ability to influence the other government's actions.
- Perceive inconsistent policies as the result of duplicity and Machiavellian maneuvers, rather than as the product of weak leadership, vacillation, or bargaining among diverse bureaucratic or political interests.

Similarity of Cause and Effect

When systematic analysis of covariation is not feasible and several alternative causal explanations seem possible, one rule of thumb people use to make judgments of cause and effect is to consider the similarity between attributes of the cause and attributes of the effect. Properties of the cause are "... inferred on the basis of being correspondent with or

ists who lack the time or access to evidence to go into details must necessarily take shortcuts. The obvious shortcut is to use the availability rule of thumb for making inferences about probability.

Many events of concern to intelligence analysts

... are perceived as so unique that past history does not seem relevant to the evaluation of their likelihood. In thinking of such events we often construct scenarios, i.e., stories that lead from the present situation to the target event. The plausibility of the scenarios that come to mind, or the difficulty of producing them, serve as clues to the likelihood of the event. If no reasonable scenario comes to mind, the event is deemed impossible or highly unlikely. If several scenarios come easily to mind, or if one scenario is particularly compelling, the event in question appears probable.¹³⁵

US policymakers in the early years of our involvement in Vietnam had to imagine scenarios for what might happen if they did or did not commit US troops to the defense of South Vietnam. In judging the probability of alternative outcomes, our senior leaders were strongly influenced by the ready availability of two seemingly comparable scenarios—the failure of appeasement prior to World War II and the successful intervention in Korea.

Many extraneous factors influence the imaginability of scenarios for future events, just as they influence the retrievability of events from memory. Curiously, one of these is the act of analysis itself. The act of constructing a detailed scenario for a possible future event makes that event more readily imaginable and, therefore, increases its perceived probability. This is the experience of CIA analysts who have used various tradecraft tools that require, or are especially suited to, the analysis of unlikely but nonetheless possible and important hypotheses. (Such techniques were discussed in Chapter 6, "Keeping an Open Mind" and Chapter 8, "Analysis of Competing Hypotheses.") The analysis usually results in the "unlikely" scenario being taken a little more seriously. This phenomenon has also been demonstrated in psychological experiments.¹³⁶

113. For many historical examples, see Jervis, *ibid.*, p. 321-23.

135. *Ibid.*, p. 229.
136. John S. Carroll, "The Effect of Imagining an Event on Expectations for the Event: An Interpretation in Terms of the Availability Heuristic", *Journal of Experimental Social Psychology*, 14 (1978), pp. 88-96.

In sum, the availability rule of thumb is often used to make judgments about likelihood or frequency. People would be hard put to do otherwise, inasmuch as it is such a timesaver in the many instances when more detailed analysis is not warranted or not feasible. Intelligence analysts, however, need to be aware when they are taking shortcuts. They must know the strengths and weaknesses of these procedures, and be able to identify when they are most likely to be led astray. For intelligence analysts, recognition that they are employing the availability rule should raise a caution flag. Serious analysis of probability requires identification and assessment of the strength and interaction of the many variables that will determine the outcome of a situation.

Anchoring

Another strategy people seem to use intuitively and unconsciously to simplify the task of making judgments is called anchoring. Some natural starting point, perhaps from a previous analysis of the same subject or from some partial calculation, is used as a first approximation to the desired judgment. This starting point is then adjusted, based on the results of additional information or analysis. Typically, however, the starting point serves as an anchor or drag that reduces the amount of adjustment, so the final estimate remains closer to the starting point than it ought to be.

Anchoring can be demonstrated very simply in a classroom exercise by asking a group of students to estimate one or more known quantities, such as the percentage of member countries in the United Nations that are located in Africa. Give half the students a low-percentage number and half a high-percentage number. Ask them to start with this number as an estimated answer, then, as they think about the problem, to adjust this number until they get as close as possible to what they believe is the correct answer. When this was done in one experiment that used this question, those starting with an anchor of 10 percent produced adjusted estimates that averaged 25 percent. Those who started with an anchor of 65 percent produced adjusted estimates that averaged 45 percent.¹³⁷

Because of insufficient adjustment, those who started out with an estimate that was too high ended with significantly higher estimates than

chologists. When experimental results deviated from expectations, these scientists rarely attributed the deviation to variance in the sample. They were always able to come up with a more persuasive causal explanation for the discrepancy.¹¹⁰

B. F. Skinner even noted a similar phenomenon in the course of experiments with the behavioral conditioning of pigeons. The normal pattern of these experiments was that the pigeons were given positive reinforcement, in the form of food, whenever they pecked on the proper lever at the proper time. To obtain the food regularly, they had to learn to peck in a certain sequence. Skinner demonstrated that the pigeons "learned" and followed a pattern (which Skinner termed a superstition) even when the food was actually dispensed randomly.¹¹¹

These examples suggest that in military and foreign affairs, where the patterns are at best difficult to fathom, there may be many events for which there are no valid causal explanations. This certainly affects the predictability of events and suggests limitations on what might logically be expected of intelligence analysts.

Bias Favoring Perception of Centralized Direction

Very similar to the bias toward causal explanations is a tendency to see the actions of other governments (or groups of any type) as the intentional result of centralized direction and planning. "... most people are slow to perceive accidents, unintended consequences, coincidences, and small causes leading to large effects. Instead, coordinated actions, plans and conspiracies are seen."¹¹² Analysis overestimate the extent to which other countries are pursuing coherent, rational, goal-maximizing policies, because this makes for more coherent, logical, rational explanations. This bias also leads analysts and policymakers alike to overestimate the predictability of future events in other countries.

Analysts know that outcomes are often caused by accident, blunder, coincidence, the unintended consequence of well-intentioned policy, improperly executed orders, bargaining among semi-independent but-

110. Amos Tversky and Daniel Kahneman, "Belief in the Law of Small Numbers," *Psychological Bulletin*, 72, 2 (1971), 105-110.

111. B. F. Skinner, "Superstition in the Pigeon," *Journal of Experimental Psychology*, 38 (1948), 168-172.

112. Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976), p. 320.