CHAPTER 14

Constructing and Reconstructing the Past and the Future in the Present

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OVERVIEW: TIME AS ORIGAMI

We have been thinking about time and truth—about the relations among past, present, and future, and about the extent to which our memories of the past and anticipations of the future are veridical. It seems natural to think of time in terms of three major divisions—past, present, future—arrayed in a linear fashion in some infinite abstract space, through which we move in a single, forward direction. In this view, we may remember or forget the past and imagine or ignore the future, but both past and future are essentially beyond reach. Such a characterization, however, misses something fundamental about our relation as psychological (cognizing, feeling) beings to time. Past, present, and future are not discrete divisions among an orderly succession of life's events. Rather, past, present, and future fold backward and forward like Japanese origami. They collapse onto each other, emerge from each other, and constantly determine each other, as we construct and reconstruct both past and future in the present, and the past and future construct the present.[1]

This origami quality of time derives from many psychological factors. Among the most important are the preconceptions we hold, confusion among sources of information, our mood, what we focus on when we think about events, our thoughts about the future and about what we might be like, considerations of what might have been, and our strategies for seeking and evaluating information. In discussing these factors, we do not make a strong distinction between cognitive and motivational effects because, in origami time, cognition and motivation often have a mutually metamorphic relation. Yesterday's motivational effects become today's cognitive constraints, and today's cognitive constraints determine tomorrow's active motives. Given the inseparability of cognition and motivation, and their many potentially distorting effects, what prevents us from drifting into a world of fantasy pasts and futures? How do we remain anchored in reality, and

what sort of autobiographical truth is possible? These are some of the factors and issues we explore.

Construction and Reconstruction

In this chapter, "construction" refers to creating a past and future in the present, and "reconstruction" refers to altering (distorting) our memory for or anticipation of what has been created. The past is constructed because each person's past is continually changing as "now" is amalgamated into the past. As the past expands, we can change it. We cannot change a particular event, but we can change the entire context or background we refer to as "the past" and in which a particular event is interpreted. Thus we may change the meaning or impact of a particular past event by constructing a new past now.

Similarly, we construct the future. What we may do in the future is determined in large part by what we have done (or imagined doing) in the past. The past, in turn, is an amalgamation of "nows." Because we are projected into the future by a past that consists of an amalgamation of nows, we are constantly constructing the future (putting constraints on it) by what we do now. Thus the past and future are constructions of the present.

We may or may not, however, remember or anticipate these initial constructions veridically (as they really were or actually will be). Errors or distortions may be introduced in our recollections of the past and anticipations of the future by reconstructive processes. Such distortions may have positive as well as negative consequences (e.g., Taylor & Brown, 1988).

Cognition and Motivation

Remembering and anticipating are typically organized around purposes, goals, or agendas. Some agendas (e.g., to protect self-esteem, to see the future as bright) seem motivated or "hot," and other agendas (e.g., to understand a story) seem more purely cognitive or "cold" (Markus & Zajonc, 1985). The role in our lives of motives—hopes, fears, needs, desires, and so forth—is particularly intriguing; however, the mechanisms by which goals affect cognition are probably similar, whether the goals are hot or cold. Whether hot or cold, cognition is affected by schemas, expectancies, and inferential processes that, by their very nature, create "vested interests." Both emotional and less emotional goals influence which cognitions take place, and vice versa. Cognitions may be biased to meet needs and desires, as well as less affectively toned goals of individuals, and cognitions can in turn instigate affect, motivation, and goals. One way in which goals determine cognitions is by activating relevant information (e.g., memories of recent successes to repair self-esteem). A motive may also operate more indirectly by providing the conditions for continuing a particular line of thought. That is, we are likely to keep cognitions going that satisfy an activated goal and to cut short others that do not. Cognitive, motivational, and affective processes are constantly interacting (e.g., see Pyszczynski & Greenberg, 1987).

Just as important as the interaction of cognition and motivation at any given moment in time is their interaction across time. For example, suppose that a desire to control events prompts problem-solving activities. These activities not only may result in solutions to particular problems, but may contribute to the development of a repertoire of problem-solving strategies for future problems that may be elicited later, whether or not a desire for control is an active motive. In turn, these ready cognitive schemas for characterizing situations in terms of the strategies they call for may later be more likely to activate some motives (e.g., exploration) than others (e.g., avoidance of failure). In short, activities driven by current motives affect future cognitions, which affect future motives, which affect future cognitions, and so forth. Given this tangle of forces over time, it is somewhat arbitrary to attribute some effects to motivation and some to cognition, although it is often analytically useful.

In the next section, we consider various mechanisms by which the past is constructed and reconstructed. Following this, we discuss constructive and reconstructive processes as they affect our anticipations of the future and our actual futures. Throughout the chapter, we consider the factors that produce veridical and distorted recollections of the past and anticipations of the future.[2]

THE PAST AS A CONSTRUCTION AND RECONSTRUCTION IN THE PRESENT

The primary way in which the past is constructed in the present is, of course, that our current actions and thoughts become the past. That is, what we do and experience now sets up the "reality constraints" for our future remembering. Although this is obvious, we often do not sufficiently appreciate the profound way in which our current actions and thoughts constrain the possibilities for future remembering. Similarly, we may fail to take into account the extent to which our current actions and thoughts constrain our current remembering.

As events occur, we frame them in terms of schemas, expectancies, attitudes, goals, motives, and emotions. During the retention interval, we experience other events (again as framed by the cognitive and emotional context we bring to them) that may affect our interpretation of earlier events or their accessibility, or that may become confused with earlier events. At retrieval, we are once again influenced by our schemas, motives, and so forth, as well as by the criteria we use in evaluating the accuracy of what we remember. Encoding, retention, and retrieval stages cannot be separated completely for analysis, because what will be an effective set of retrieval circumstances is not independent of what the initial encoding circumstances were (Tulving, 1983), and how we frame events during a retention interval is not independent of how we framed them before or how we will frame them later. In spite of the difficulty of clearly identifying a single point in time for certain memory effects, available evidence gives us some insight into the complex set of factors that may influence our sense of the past.

Preconceptions

Among this set of factors, perhaps the most important are the preconceptions we have that operate during encoding and retrieval. Preconceptions, whether described as schemas (Bartlett, 1932; Neisser, 1976), coding systems (Bruner, 1957a), cognitive contexts (Bransford & Johnson, 1972), frames (Minsky, 1975), or scripts (Abelson, 1976), serve to structure information, direct attention, and guide inferences. Without schematic processing, little of our experience would seem coherent, or would be understood or available for voluntary recall (e.g., Bransford & Johnson, 1972). That is, schematic knowledge underlies accurate recall of the past. But for this clear benefit there are potential costs—omissions and distortions introduced by schematic processing, or, at the least, a kind of shearing of experience to fit the outlines of our schemas.

There are now many demonstrations of the effects of preconceptions in processing and remembering information (e.g., Arkes & Freedman, 1984; Bower, Black, & Turner, 1979; Bransford & Johnson, 1973; Chase & Simon, 1973; Chiesi, Spilich, & Voss, 1979; Johnson, Bransford, & Solomon, 1973; Markus, 1977; Pichert & Anderson, 1977; Snyder & Uranowitz, 1978; Spiro, 1977; Sulin & Dooling, 1974). The overall empirical picture, however, is complex, and a summary of schema effects is beyond the scope of this chapter (see Alba & Hasher, 1983; Higgins & Bargh, 1987; Markus & Zajonc, 1985; Taylor & Crocker, 1981, for reviews).[3] For our purposes, what is important is that sometimes the schemas that are activated either at input or retrieval produce a selective bias in what is remembered or introduce distortions. For example, Spiro (1977) found that subjects recalling a story about a couple made intrusions consistent with whether they had been told that the couple split up or lived happily ever after. In addition to intrusions in recall, people may make different interpretations of events, depending on which schema is active (e.g., Bransford & Johnson, 1973; Pichert & Anderson, 1977); may falsely recognize information consistent with a schema (e.g., Sulin & Dooling, 1974); and may reorder events in line with a schema (e.g., Bower et al., 1979).

Preconceptions in the form of expectancies may produce effects on recall that promote and sustain group stereotypes. For example, Rothbart, Evans, and Fulero (1979) presented subjects with behavioral descriptions of men (e.g., "George was his class valedictorian"). Descriptions fell into several categories, including "intellectual" and "friendly." Although there were equal numbers of intellectual and friendly descriptions, subjects who had been led in advance of hearing the descriptions to expect that the group of men was friendly later gave higher frequency estimates for and recalled more descriptions having to do with friendliness. Similarly, subjects who had been led to expect that the group was intelligent gave higher frequency estimates for and recalled more descriptions having to do with intelligence. Thus, preconceptions about group stereotypes or about individuals (including the self) may be reinforced by selective noticing and remembering of information consistent with these expectancies.

Other preconceptions—for example, our current attitudes—affect how we recall our personal histories (Bem & McConnell, 1970; Goethals & Reckman, 1973; Ross, McFarland, & Fletcher, 1981; Ross & Shulman, 1973), and how we recall our past actions may affect our current attitudes (Chaiken & Baldwin, 1981; Salancik, 1974). For example, Ross et al. (1981) exposed subjects to tape recordings of "health officials" explaining either the reasons why one should or shouldn't brush one's teeth. Later, in a seemingly unrelated context, subjects who had heard the positive messages were more favorable toward toothbrushing than were subjects who heard the negative messages. Most important, subjects who heard the message against toothbrushing reported brushing their teeth fewer times during the previous 2 weeks than did subjects hearing the positive message. In a similar experiment (Ross, McFarland, Conway, & Zanna, 1983), subjects heard a message discouraging physical exercise from either a credible source (a world authority on effects of exercise) or a noncredible source (a spokesman for the local chapter of the "Fat is Beautiful" organization). The credible group later expressed a more negative opinion about vigorous exercise. More important, although subjects actually reported the same types of activities in the two conditions, subjects in the credible condition rated the exercises they engaged in as less vigorous than did subjects in the noncredible condition. These results suggest that people selectively recall and interpret past actions to make them consistent with current attitudes (Ross et al., 1983).

Ross (1989) argues that how current attitudes affect memory depends on the operation of implicit theories of stability and change. When people change but do not assume that they have changed, they tend to recall in ways that support their sense of consistency; when people do not change but assume that they have, they tend to recall in ways that support their idea of change. As an example of what happens when subjects expect consistency in themselves, McFarland and Ross (1987) used personality characteristics that people generally think of as stable and has subjects report their impressions of themselves on two occasions, 2 months apart. Subjects whose views of themselves had become more favorable recalled their earlier evaluations as more favorable than they had been, and subjects with more negative views recalled more negative evaluations than they had given.

Biased recall also occurs when people expect change but little or none occurs. McFarland, Ross, and DeCourville (in press; cited in Ross, 1989) asked women who were not menstruating to recall ratings of physical and affective symptoms they had given previously when they were menstruating. Their beliefs about the effects of menstruation were also assessed. The more strongly a woman believed that menstruation has negative effects, the more exaggerated her remembered distress was. Conway and Ross (1984) had subjects evaluate their study skills and then assigned them to either a study skills program or a waiting-list group. When subjects were later asked to recall their initial evaluations, program participants, compared to waiting-list subjects, retrospectively belittled their initial study skills. In addition, although grades were not affected by the program, participants recalled having received better grades than they had actually obtained for the term during which the program was conducted. Thus, in this case, subjects appeared to

support an expectation or theory of change by exaggerating in recall how poorly off they were before the program and by misremembering evidence relevant to the effectiveness of the program. Ross and McFarland (1988) speculate that a similar phenomenon may produce overly favorable evaluations of certain diets and popular therapies (e.g., est). Of course, biased recollections may also contribute to subjective evaluations of self-improvement programs and treatments that clearly work by more objective measures.

Some biases arise from relatively cohesive and stable structures (e.g., stereotypes), and others may be determined by more transient factors. For example, how a question is asked may set up a biased search in memory about either oneself or others (Kunda, in press; Salancik, 1974). Sanitioso (1989) asked subjects to recall information about themselves; subjects asked whether they were extraverted recalled more extraverted material about themselves and judged themselves as more extraverted than did subjects asked whether they were introverted. Snyder and Cantor (1979) had subjects read an account of a person's behavior, and then later judge the person's suitability for a job. If they thought that the job required an extraverted personality, they were more likely to recall facts consistent with the idea that the person was extraverted; if they thought that the job required an introvert, they were more likely to recall facts consistent with the idea that the person was introverted.

Confusion among Sources of Information

In addition to errors and biases introduced by preconceptions operating at encoding and retrieval, our recollections may be distorted by failures in "source monitoring" (Johnson, 1988a; Lindsay & Johnson, 1987a). For example, people may attribute information from one external source to another, as in misremembering that something said by Fran was said by Chris (e.g., Foley, Johnson, & Raye, 1983; Lindsay, 1987; Raye & Johnson, 1980). People also confuse different types of self-generated memories; for example, they may fail to discriminate between what they imagined themselves doing or saying and what they actually did or said (Anderson, 1984; Foley & Johnson, 1985; Foley et al., 1983).

Reality monitoring (Johnson, in press; Johnson & Raye, 1981) is an especially critical type of source monitoring that involves discriminating between what has been generated and what has been perceived. People's current actions and thoughts create conditions that may later lead to errors and distortions in memory. For example, individuals may confuse what they said with what someone else said (e.g., Brown & Murphy, 1989; Voss, Vesonder, Post, & Ney, 1987), although subjects sometimes are remarkably good at this discrimination (see Foley et al., 1983; Hashtroudi, Johnson, & Chrosniak, 1989; Raye & Johnson, 1980; Ross & Sicoly, 1979). People confuse what they imagined with what they saw (e.g., Durso & Johnson, 1980), and the more often they think about something, the more often they think they saw it (Johnson, Raye, Wang, & Taylor, 1979; Johnson, Taylor, & Raye, 1977). People confuse what they imagined someone said with what the person actually said (Johnson, Foley, & Leach, 1988). And

people may confuse their description of an event with the actual event (Carmichael, Hogan, & Walter, 1932; Higgins & Rholes, 1978; Schooler, 1987). Reality-monitoring failures are potentially insidious, because people are most likely to confuse what they generated themselves with what they perceived when the generation is relatively natural or effortless (Durso & Johnson, 1980; Finke, Johnson, & Shyi, 1988; Johnson, Raye, Foley, & Foley, 1981).

Reality-monitoring failures not only contribute to a reconstructed memory of events of the past, but also influence knowledge and beliefs (Johnson, 1988b; Wicklund, 1989). For example, given that people come to believe in the validity of statements they have heard repeatedly (Arkes, Blumer, & Boehm, 1987; Hasher, Goldstein, & Toppino, 1977), it seems likely that they would also come to believe the statements that they repeat to others (e.g., Higgins & Rholes, 1978) or to themselves. Reality-monitoring failures may also operate in the formation and maintenance of stereotypes (Slusher & Anderson, 1987). Strong expectations and beliefs, including stereotypes, determine representations of imaginary events. Thus, in imagining an upcoming basketball game for the state championship between two teams with which we are unfamiliar, we may see a lot of black players in our mind's eye. In imagining a social event involving women, we may see it as entailing emotional exchanges, compliments, and gossiping. On the other hand, imagination of an all-male social event may include assertive and aggressive behaviors, joking, and bragging. Our expectations constrain our mental simulation of events and the traits and behaviors exhibited by imagined group members. Subsequently, we may fail to distinguish things that we have imagined from things that we have actually observed. Instances that we have only imagined may be taken as actual instances and lead to inflated frequency estimates for stereotype-consistent behaviors; thus, they may verify our initial stereotypic beliefs. Such imagined scenarios may contribute to our beliefs about the characteristics of specific individuals (including ourselves), as well as about groups.

The critical importance of reality-monitoring processes is made especially apparent when they break down dramatically, as in the case of delusional syndromes (Johnson, 1988a) or in the striking instances of confabulation found in certain types of organic brain damage (Johnson, in press). Although such extreme disruption of normal reality-monitoring processes is rare, to some degree we all have a sense of the past contaminated by what we have previously imagined, hoped for, anticipated, and feared. In spite of the dangers of reality-monitoring failures (e.g., heated arguments between intimates about whether and how events occurred, controversies between colleagues over ownership of ideas, and severe disruption of everyday function in extreme cases), some inaccuracy in reality monitoring may be good for us. For example, the tendency to confuse our wishes with reality and thus perhaps to have an inflated idea of the number of good things that have happened to us may help protect us from depression or help us deal with stress (Alloy & Abramson, 1979; Taylor & Brown, 1988).

Potential confusions between memories for thoughts and memories for perceptions are not the only consequences of thoughts, of course. For example, mentally reviewing autobiographical events increases their accessibility. If we

think of several different past autobiographical events from a given category (e.g., times we loaned people money), we are likely later to think that events of that type have been more frequent in our lives than if we think in detail about only one such event (Lindsay & Johnson, 1987b). That is, in estimating the frequency of various kinds of events in our personal history, we do not completely discount or correct for the heightened availability (Tversky & Kahneman, 1973) that we may create by reminiscing and ruminating. Again, this potential source of distortion from past thoughts may have benefits as well as costs. If we rehearse past successes when faced with a failure, we may keep our successes accessible for the future, add to their apparent frequency, and in so doing provide ourselves with resources to repair self-esteem when it is challenged (Liu & Steele, 1986).

Another consequence of thinking is that thresholds of particular concepts or schemas may be lowered, and thus they may be more likely to be used again (e.g., Bruner, 1957b; Higgins, 1989a; Higgins & Bargh, 1987). Especially important, we think, are the consequences of entertaining some hypotheses but not others, in attempting to understand or explain what has happened. Highly accessible hypotheses, or ones for which there is already evidence, may be the ones people continue to selectively examine. In collecting information for evaluating potential causes of events, people tend to engage in what Shaklee and Fischhoff (1982) call a "truncated search." That is, subjects look for evidence consistent with a particular sufficient cause (sometimes an already known cause), rather than looking for evidence about additional sufficient or contributing causes. It seems likely that people also engage in truncated searches of autobiographical memory when attempting to determine the causes of events in their own lives. Such truncated searches may make them satisfied with explanations that occur readily and fit their current expectations. Although initial explanations may often be relevant, truncated searches may prevent people from discovering other equally important causes as they remember their personal histories.

In some instances, accessibility effects involve source confusions—for example, when we falsely believe that our expectations or hypotheses veridically arise from what we have perceived, when in fact they arise from what we have thought. Source-monitoring failures, including reality-monitoring failures, may underlie a number of other memory phenomena, such as errors induced in eyewitness testimony by misleading questions (Loftus, 1979), "sleeper effects" (Greenwald, Pratkanis, Leippe, & Baumgardner, 1986), and schema-related intrusions and false recognitions (Alba & Hasher, 1983; Johnson & Raye, 1981; Lindsay & Johnson, 1989). Confusion among sources of information occurs when we generate a selective description of a person or event and later treat our generated description as if it were an unbiased representation of what we perceived. For example, we may slant our description of a person to fit the attitudes of listeners, and then later forget this contextual influence and distort our recall and evaluation of the person in the direction of our description (Higgins & Stangor, 1988).

Failure in source monitoring may give rise to the feeling that a name or a fact that is familiar from a recent exposure was known previously (e.g., Jacoby, Kelley, Brown, & Jasechko, 1989; Schacter, Harbluk, & McLachlan, 1984) and may

contribute to the uncanniness of "hindsight" (Fischhoff, 1975, 1977; Fischhoff & Beyth, 1975). For example, Fischhoff and Beyth (1975) asked subjects to estimate the likelihood of various possible outcomes of Nixon's then-upcoming Peking and Moscow trips. After the trips, subjects were asked to remember their predictions and to state whether or not an event had actually happened (e.g., whether Nixon visited Lenin's tomb). Subjects remembered having given higher probabilities than they actually had given to events they believed had happened and lower probabilities to events they believed had not happened. Similarly, if subjects are given outcome information at the time they make initial judgments about historical events, they cannot respond as if they did not know the outcome (Fischhoff, 1975). In effect, subjects think of themselves (i.e., their prior experience) as the source of knowledge that they in fact derived from other sources. Under many circumstances, this tendency to "know it all along" may be a form of relatively harmless self-flattery. But in some circumstances, such source confusion may make people particularly harsh judges of themselves and others. People who feel that certain predictions were obvious at the time (even if they were not) may then be left with regret or guilt about not having taken actions that they should have. Similarly, they may unfairly accuse others of failing to take obviously needed action. Furthermore, if people underestimate the extent to which they could not anticipate events in the past, they are unlikely to look for better ways of doing so in the future. Thus, hindsight bias reduces the chances that people will learn from the past (Fischhoff, 1975).

Moods

Moods are another potential source of selection and bias in remembering. Two types of mood effects have been investigated (Eich, 1989). "Mood dependence" refers to the phenomenon whereby events encoded in a particular mood are most retrievable in that mood, regardless of the events' affective valence or content. "Mood congruence" refers to the enhanced encoding or retrieval of events whose affective content is congruent with one's current mood (see Blaney, 1986, Eich, 1989, and Isen, 1984, for reviews).

With respect to the issue of mood-dependent effects, Eich (1989) makes the intriguing suggestion that previous findings showing state-dependent effects of drugs or physical context may have been mediated by mood effects. Drugs or physical context may affect mood, and the decrements in memory that result from changes in drug state or physical context between the initial event and attempted retrieval may be attributable to failures in the match between moods at encoding and retrieval. Another new idea regarding changes in mood state comes from work by Eich and Metcalfe (1989). They report evidence that internally generated events are less likely than externally derived events to be recalled following a shift in mood state. This finding suggests that memory for what has been previously thought may be more subject to mood effects than memory for what has been previously perceived. If so, people are likely to be particularly unreliable reporters of their own past feelings and beliefs.

With respect to mood congruence, Williams and Dritschel (1988) suggest that, although mood-congruent effects found with laboratory-learned materials have not been reliable (Bower & Mayer, 1986; Hasher, Rose, Zacks, Sanft, & Doren, 1985), the effects of mood congruency are more robust for autobiographical recall (Teasdale & Fogarty, 1979; Teasdale, Taylor, & Fogarty, 1980). The potential role of mood in autobiographical recall is far-reaching. Reus, Weingartner, and Post (1979) suggested that depressed patients may find it difficult to recall or elaborate on earlier periods of time when they felt better, because the positive feelings from the earlier time do not match the negative feelings of the current mood. Williams and Broadbent (1986) found that patients who had taken drug overdoses in attempting suicide took longer than controls to retrieve a memory when given a positive cue word, but were comparable to controls when given a negative cue—findings suggesting a mood-congruent bias.

Not only does current mood affect what people are likely to recall, but what they recall may affect their current mood and sense of well-being. Strack, Schwarz, and Gschneidinger (1985) asked subjects to think about three events that were either particularly positive and pleasant or particularly negative and unpleasant. Some subjects were asked to describe events from their present life (in effect, from their recent past), and others were asked to describe events from their past life. Subsequently, subjects answered some questions from which an index of subjective well-being was derived. Subjects who described recent events were happier and more satisfied if the events they recalled were positive than if they were negative. In contrast, subjects who described events from the more distant past rated themselves as less happy when the events were positive than when the events were negative. Strack et al. have suggested that, whereas the recent past is taken as representative, the more distant past may become a standard of comparison against which the present situation is evaluated. They also reported subsequent experiments suggesting that when subjects were induced to think about *how* past events came about, their subjective well-being was influenced in the direction (positive or negative) of the events they recalled, whereas if they thought about *why* events came about, their ratings of subjective well-being showed a contrast effect. Strack et al. have suggested that thinking about *how* induces people to think in a vivid, detailed way about events, whereas thinking about *why* induces people to think about the abstract causes of events. Vivid memories presumably produce affect, which directly contributes to ratings of current well-being; more pallid memories function as standards of comparison.

Focus

Consistent with the Strack et al. (1985) study, other findings illustrate that how people focus on events affects the impact of these events. For example, in thinking about current or past events, people can focus on perceptual or "factual" aspects or on apperceptive (thoughts and feelings) aspects. Suengas and Johnson (1988) report evidence suggesting that the type of focus people adopt in thinking about events has consequences for how the events are later remembered. Subjects

either imagined or engaged in a number of "minievents," such as wrapping a package, having coffee and cookies, and writing a letter. Subsequently, some subjects were instructed to think about various perceptual aspects of the events (e.g., colors and sounds), and others were instructed to think about apperceptive aspects of the events (what they were thinking or feeling at the time). On a later test in which subjects rated various qualitative characteristics of their memories for these events, there was some evidence that thinking about apperceptive aspects of events decreased access to perceptual qualities of memories and reduced initial differences between perceived and imagined events in their apperceptive qualities. Ordinarily, perceptual qualities provide highly salient information for discriminating perceived from imagined events in memory (i.e., for reality monitoring; Johnson, Foley, Suengas, & Raye, 1988; Johnson & Raye, 1981). The results of the Suengas and Johnson study suggest that focusing on apperceptive aspects of experience might decrease one's ability to later discriminate real from imagined events (see Hashtroudi, Johnson, & Crosniak, 1990, for evidence consistent with this idea).

Other evidence that type of focus may have important implications for memory comes from work by Williams and his colleagues (Williams & Broadbent, 1986; Williams & Dritschel, 1988; Williams & Scott, 1988). People who had recently attempted suicide by drug overdose were presented with words (e.g., "humor," "devotion," "boredom," "sickness") and were asked to recall a specific autobiographical memory for each. Compared to controls, attempted-suicide patients tended to retrieve quite general memories (e.g., "when I was at school," "that hotel in Germany") rather than more specific episodes (Williams & Broadbent, 1986; Williams & Dritschel, 1988). Patients with diagnoses of major depressive disorder also tended to be inappropriately general in remembering (Williams & Scott, 1988). One possibility is that overgeneral recall is caused by transient factors related to immediate crisis. That this may not be the entire story is suggested by the results of a follow-up experiment with ex-suicide patients who had taken an overdose between 3 and 14 months previously. Even quite long after the crisis of attempted suicide, patients showed a tendency for overgeneral recall.

One provocative possibility suggested by Williams and Dritschel (1988) is that people who are vulnerable to depression and thoughts of suicide tend to encode events in a general rather than a specific way initially (cf. Abramson & Martin, 1981, and Beck, 1967). Furthermore, Williams and Dritschel suggest that affective significance is more likely to be attached to more general encodings, perhaps because it is at the more general level that particular events relate to long-term criteria. People with a tendency toward general encoding may later have difficulty recalling specific episodes, but the episodes may still have made a contribution to the accessibility of the general category to which the event was assigned (e.g., failures).

Williams and Dritschel (1988) discuss some clinical implications of overgeneral encoding. One is that

the type of affect which is associated with generic memory is unhelpful for therapeutic process. . . . Greater benefit is obtained in cognitive therapy if depressed patients are able to go beyond the general statement "I've always been a failure" to describe the details of particular instances when they feel they have failed. (p. 33)

A similar point is made by the results of a study by Wahler and Afton (1980), which Williams and Dritschel discuss. Mothers who were under multiple stresses and who had problems with their children tended to give general descriptions of their children's behavior rather than detailed accounts. Wahler and Afton (1980) suggested that at the time the behaviors occurred, these mothers tended to ignore aspects of the behavior that were specific to the situation and instead quickly classified the behavior as naughty or malicious. As treatment progressed, the mothers became more specific in their descriptions. Williams and Dritschel (1988) raise the possibility that a cognitive style that results in overgeneral memories may be linked to real world problems in living.

Frank and Gilovich (1989) discuss another type of focus phenomenon that may contribute to a reconstruction of the past in the present. With the passage of time, people tend increasingly to attribute their behavior to dispositional factors rather than situational factors (Moore, Sherrod, Liu, & Underwood, 1979; Peterson, 1980; but see Miller & Porter, 1980). Based on observations that actors tend to see their actions as determined by aspects of the situation, whereas observers tend to see actors' behaviors as determined by traits or dispositions (Jones & Nisbett, 1971), Moore et al. (1979) proposed that, with time, people may shift from an actor's to an observer's visual perspective with respect to their own behavior. Consistent with this idea that people's visual images of events become more observer-like with the passage of time, Nigro and Neisser (1983) reported that in remembering, people are more likely to adopt an observer perspective for older memories.

Frank and Gilovich (1989) reported direct evidence for a relation between perspective while remembering and type of attribution. Subjects were in a get-acquainted conversation, then rated themselves on several characteristics (e.g., friendliness, nervousness) and indicated to what extent personality traits caused them to behave as they did during the conversation and to what extent characteristics of the situation caused them to behave as they did. Three weeks later, they filled out the same questionnaire and indicated whether their memory perspective was as an observer or similar to what it was when the event occurred (a "field" perspective). Attributions of people remembering from an observer's perspective tended to become more dispositional and less situational with the passage of time, compared to those subjects who recalled the conversation from a field perspective. In a second study, subjects participated in the get-acquainted conversation and then were randomly assigned to remember from either a field or an observer perspective. Subjects in the observer-perspective condition tended to make more dispositional attributions for their behavior than they had made initially; subjects

in the field-perspective condition tended to attribute their behavior less dispositionally.

Frank and Gilovich speculate that people develop an observer perspective because, as time passes, which visual perspective a person adopts in remembering becomes the most powerful determinant of a person's attributions. The implication of this suggestion is that, with the passage of time, other information that would support a field or participant perspective (e.g., initial thoughts and feelings) fades from memory at a faster rate than do visual qualities. Interestingly, Suengas and Johnson (1988) report evidence consistent with this line of thought; in that study, memory for thoughts and feelings seemed to decrease at a faster rate than memory for visual aspects of events.

The Frank and Gilovich (1989) findings raise the possibility that we tend to see our former selves as more guided by traits (e.g., shyness, lack of self-confidence, honesty) and less affected by situational factors than we actually were. If we see the past as a consequence of our dispositions rather than the situations we found ourselves in (or created for ourselves), and if we are not happy about the past, we may be tempted to try to change ourselves (try to be more extraverted) rather than to change the situations we seek out (find some people we want to talk to). If so, therapies directed at changing traits (promising dramatic changes in outlook or personality) may seem attractive, although therapies directed at changing situations may in fact be more effective.

Frank and Gilovich also raise the interesting question of whether there are people who chronically recall events from either a field or an observer perspective, and speculate that those who tend to recall events from an observer's perspective tend to see themselves as the primary cause or origin of their actions. If so, such people may also see themselves as having stable traits and may be more inclined to minimize differences between current and past attitudes by adopting a theory of no change (Ross, 1989).

The Issue of Veridicality

In a world open to multiple interpretations, confronted by a memory system that selects, edits, and otherwise reconstructs events, what is veridical memory? Perhaps the concept of truth is simply irrelevant to the issue of personal memory. Although much of the research in memory and cognition in the last 20–25 years has focused on errors and distortions in memory and has highlighted the reconstructive nature of memory, more recently researchers have emphasized that reconstructive processes are, after all, constrained by reality (e.g., Alba & Hasher, 1983; Brewer, 1988; Johnson & Raye, 1981; Kunda, in press; Ross & McFarland, 1988).

For example, in studies of both laboratory-learned materials and autobiographical recall, there are surprisingly few distortions and intrusions in recall of even fairly complex events (e.g., Alba & Hasher, 1983; Brewer, 1988; Johnson, Kahan, & Raye, 1984; Zangwill, 1972). Although misleading information reliably produces errors in memory, subjects are not as likely to be misled about central

facts as they are to be misled about peripheral details (Loftus, 1979). Some distortion arises from the criteria subjects use when remembering: They may too readily accept a memory as truth. If people are induced to use more stringent criteria, they may avoid errors they would have made otherwise (e.g., Hasher & Griffin, 1978; Lindsay & Johnson, 1989; Raye, Johnson, & Taylor, 1980). Not surprisingly, whether one finds accuracy (e.g., Brewer, 1988) or distortion (e.g., Barclay & DeCooke, 1988) may have something to do with one's theoretical expectations (McCauley, 1988). It may also have to do with whether perceptual or reflective records of events are accessed in a given situation (e.g., Johnson, 1983).

The limits of reconstructive processes have also been noted in the social-cognitive literature (Ebbesen, 1981; Kunda, in press; Markus & Zajonc, 1985; Ross & McFarland, 1988). Ross and McFarland (1988) suggest that researchers may have exaggerated the degree of fabrication subjects engage in by focusing on bias rather than accuracy, and they point out that there may be limits to how much current attitudes reshape people's recollections of their prior histories. Recall of especially vivid or readily recalled events may be immune to changes induced by changes in attitudes (Ross et al., 1981). On the other hand, reconstruction may take place in quite subtle ways for even vivid memories. People

> need not reshape or falsify the more "objective" features of their past actions to produce consistency with current attitudes. They may more readily change their perceptions of how or why they did something, rather than whether or how often they did it. (Ross et al., 1983, p. 260)

Kunda (in press) makes a similar point. She argues that motivated reasoning is mediated by biased memory search and belief construction. She points out, however, that "people are not at liberty to believe anything they like—they are constrained by their prior beliefs." That is, desiring a particular conclusion is not sufficient to completely overwhelm the effect of prior knowledge. (Of course, that prior knowledge will vary, depending on the cognitive and motivational factors that operated when it was derived.)

Motives, schemas (including self-schemas), moods, temporary cognitive contexts, and type of focus or perspective contribute to selective access and produce biased or distorted memories. In addition, failures in reality monitoring and source monitoring contribute to error and distortion. But when we reconstruct the past in the present, either in remembering events, remembering prior attitudes, or for the purposes of reasoning about something, we are not free to construct any prior past. We are constrained by reality-monitoring processes (Johnson & Raye, 1981) that sort fact from fantasy and that, though subject to error, ordinarily serve us reasonably well (the Christs in mental hospitals and the confabulators suffering from organic brain damage are exceptions). That is, memory pursues past actualities, not the pure possibilities of imagination (Casey, 1987). Reality monitoring grounds us in these past actualities.

Reality-monitoring processes capitalize on aspects of the memory records of what we initially experienced, using, for example, characteristic differences in

memories for perceived and imagined events to set heuristic criteria for distinguishing between them. In addition to the residual memory records of what happened, other reality-monitoring constraints on reconstruction derive from our knowledge of how the world works and of what plausibly could have happened (Johnson, in press; Johnson & Raye, 1981).[4] That is, prior knowledge may be a force for veridical memory as well as a cause of distorted memory. Still other constraints on reconstruction may derive from our understanding of ourselves as cognizing, feeling beings, and by extension from our understanding of others. Together, these various constraints allow us to monitor the origin of memories, knowledge, and beliefs; to consider a range of possibilities for what might have happened; and to estimate corresponding probabilities for these possibilities. In short, truthful remembering is constrained by what happened, and events are interpreted within a context of possibilities appropriately weighted by their corresponding probabilities.

It is especially important in remembering social information to consider the ways in which people's cognitive and motivational processes create possibilities for what happened. Suppose you claim that I make most of the decisions and I claim that you do. Is it reasonable to think that one person's memory may be more erroneous or distorted than the other's? Yes, if we could agree on what constitutes a decision and who made each one, then someone has the more accurate view of the true frequency with which each person made decisions. Thus the issue of veridicality about some social facts may be equivalent to issues of veridicality about physical facts (Were there two boxes or three? Were they all red or was one blue?). Alas, the issue of truth for much social information is complicated by many potential factors: We may not agree on what constitutes a decision; we may not agree about who made each decision; because of cognitive or motivational factors, we may fail to remember a representative sample of decisions and who made them; we may not agree about how each decision is to be weighted (even if you make three decisions to every one of mine, it may still seem to you as if I am making all the decisions if you regard those I make as more important).

We are plagued in interpersonal contexts by the problem of interpretation or appearance, and this is especially true with respect to reading other people's motives or emotions. Suppose I say you were angry with me last week and you claim you were not. Who has the veridical memory of the exchange? You may have been angry at the time and may now be misremembering your affective state. Or you may not have been angry, but I may have misperceived your affective state. Or you may not have been angry, and I may have perceived your affective state correctly at the time but now I am misremembering it. Assuming that we both know what anger is and when someone is experiencing it, then this (like the questions about the boxes) has an answer in principle. But chances are that neither of us recorded anywhere what your true state was at the time of the event. To remember veridically is to remember informed by the realization that disagreements that can only be resolved "in principle" (without benefit from further, converging evidence) cannot be resolved at all.

The fact that people do not always agree on what the same evidence means or even on the unit of analysis may further complicate the picture. "Being angry"

in a social context is not simply a matter of one person's experience. People ordinarily think of emotions as being defined by the experience of the "emoter," but they are defined as much in a social context by the experience of the "emotee"—that is, by what is communicated.

Given that two people may not agree at the time about what each is feeling, either because they "misperceive" information or because they experience it differently, or that people may misremember later what they originally felt (or misremember what they thought at the time another person originally felt), how can we speak of veridical or nonveridical memory in such cases? To remember social information veridically is to see the full range of possibilities for remembering—to see the possibility that a person might not have been angry, but might have appeared angry while experiencing something else; or to see the possibility that a person might have been angry and have forgotten (or forgiven). In other words, social memory, like memory for more "factual" events, is veridical insofar as the remembering is constrained not only by "what happened," but by our understanding of the cognitive and motivational factors that may affect our remembering and that should keep us from too readily accepting any particular memory as truth, especially memories for social information.

To what extent, then, are we "revisionist historians" with respect to our personal pasts (Greenwald, 1980; Ross et al., 1981)? As we have seen, we do interpret initial experience selectively; we also revise in remembering according to the cues we confront, and according to our current mood, attitudes, motives, schemas, and so forth. But our revisions are constrained by memory records of what happened in combination with reality-monitoring processes that evaluate what we remember. This evaluation includes constraints imposed by whatever knowledge of memory, motivational, and social processes we can bring to bear on interpreting our past.

THE FUTURE AS A CONSTRUCTION AND RECONSTRUCTION IN THE PRESENT

Thus far, we have seen how people both construct and reconstruct the past in the present. With regard to thinking about the future, we might suppose that there should be important differences from thinking about the past with respect to construction, reconstruction, and constraints. In the first place, it would appear that the future can only be constructed and shaped rather than reconstructed. After all, the future has not yet occurred. How can it be reconstructed or be distorted or nonveridically perceived? But just as the past can be either constructed and shaped in the present without distortion or can be distorted or reconstructed, so too can judgments of the future be reasonable and "accurate" in terms of the perceived probabilities of the occurrence of possible events, or nonveridical when these judgments do not conform to the actual probabilities of occurrence of possible events. And, as we shall see, these veridical or nonveridical judgments of the future can shape that future, thus either constructing a future as

it "should have been" or "reconstructing" and bringing about a future that "should not have occurred" in the absence of the judgments and their effects.

With regard to constraints in thinking about the future, we might suppose that there would be far fewer constraints than occur in thinking about the past. The past has already taken place; it is what it is. The future has yet to take place; anything is possible. Yet, as we shall see, there are indeed constraints in thinking about the future, of both a cognitive and a motivational nature, that have certain similarities with the constraints involved in thinking about the past.

Thoughts about the Future

For more than a decade, researchers have been interested in the effects of imagining and/or generating explanations for hypothetical future events and outcomes. In this work, a particular future is specified, and subjects are asked to think about and explain how and why such a future might have come about. In the first study of this sort, Ross, Lepper, Strack, and Steinmetz (1977) had subjects read detailed clinical case histories. Subjects were asked to find evidence in the case that would help them explain various possible (but not yet actually occurring) future events in the life of the clinical patient. In more recent studies, subjects have been asked to imagine and explain a variety of future occurrences: the outcome of an upcoming election (Carroll, 1978); the outcome of upcoming football games (Hirt & Sherman, 1985; Sherman, Zehner, Johnson, & Hirt, 1983); and the impact on people of watching televised aggression (Anderson & Sechler, 1986). In all cases, the hypothetical outcome that was imagined or explained was subsequently perceived as more likely to occur. For example, subjects who imagined a Ford victory in the then-upcoming 1976 Carter–Ford presidential election judged a Ford victory as far more likely than those who had imagined a Carter win (Carroll, 1978).

Thus, specifying a particular future for people to think about affects judgments of the likelihood of occurrence of such a future. These effects are generally interpreted in terms of the types of cognitive mechanisms we have discussed previously. It is assumed that when people are asked to imagine or explain a hypothetical future event, they access from memory facts and scenarios that are consistent with the outcome to be explained. It is further assumed that people are capable of easily accessing material consistent with any number of possible future outcomes. For example, people may hold in memory facts that would be consistent with a victory by either team in an upcoming basketball game or by either candidate in an upcoming election. Even when one team is a decided underdog, explanations of a victory by the underdog in terms of the gambler's fallacy (losing streaks have to end sometime) or in terms of overconfidence by the favorite team or heightened motivation by the underdog will suffice as reasonable explanations. When subsequently asked what is really likely to happen in the future, subjects will make judgments primarily on the basis of facts and impressions that are most accessible in memory. The facts and ideas generated during the recent explanation task ought to come to mind quickly and easily, and thus ought to serve as the basis of judgment.

Such a process is consistent with Tversky and Kahneman's (1973) ideas about availability and about the simulation heuristic (Kahneman & Tversky, 1982). Subjects will use the availability of information and the ease of constructing any scenario or outcome as an indication of likelihood. They may fail to recognize that the availability of certain facts in memory and the ease of construction of future scenarios may be based only on the fact that they were recently induced to access and use these facts and scenarios. As an indication of the validity of such an explanation, Sherman, Cialdini, Schwartzman, and Reynolds (1985) asked subjects to imagine contracting a (hypothetical) disease that had either easy-to-imagine or difficult-to-imagine symptoms. When the symptoms were easy to imagine, imagination led to an increase in the subjective likelihood of contracting the disease. However, when the symptoms were difficult to imagine, subjects evidently used this difficulty as a way of judging the likelihood of the disease, and the imagination task led to a decrease in the subjective likelihood of the disease. Similarly, as indicated previously, accessibility and ease of imagination or "simulation" affect our recall of the past (e.g., Finke et al., 1988; Lindsay & Johnson, 1987b).

Interestingly, specifying a particular future for people to think about not only increases judgments of the likelihood of such a future, but affects actual subsequent behavior as well. Sherman, Skov, Hervitz, and Stock (1981) asked subjects to imagine and explain either their own success or their own failure on an upcoming anagram task. Such explanations clearly affected subjects' judgments of how they were likely to do on the task. Accessibility of certain facts in memory (facts consistent with either success or failure at the task) was assumed to be the process underlying these effects. In addition, among subjects who explicitly stated their (biased) expectations, their actual performance on a subsequent anagram task was influenced. Those who had explained hypothetical success actually outperformed those who had explained hypothetical failure. Self-fulfilling prophecy effects (Darley & Fazio, 1980) were no doubt important in bringing about these results.

An additional finding from the Sherman et al. (1981) study indicated the possibility of important motivational effects of explaining undesirable future events. Subjects who had explained failure but who had not fully committed themselves to this possible future by explicitly stating expectancies actually performed best of all. It is as though the accessible possibility of future failure motivated them to avoid such a future outcome by putting more effort into the anagram task. Small doses of potential future failure may act to inoculate people against such a future by preparing them to behave in ways so as to avoid the outcome.

Thinking about specific possible futures has been shown to influence a number of other kinds of behaviors as well. Gregory, Cialdini, and Carpenter (1982) demonstrated that having people imagine enjoying the benefits of cable TV increased their likelihood of subscribing to a cable TV service. Meichenbaum and Goodman (1971) employed cognitive rehearsal and mental planning to alter the behavior of impulsive schoolchildren, and Marlatt (1978) reduced the relapse

rate among alcoholics by using similar imagination and explanation techniques. More recently, R. T. Sherman and Anderson (1987) reduced premature termination of therapy among clients by having them initially imagine and explain staying in psychotherapy for at least four therapy sessions. Finally, imagination of the future has been used to enhance the performance of athletes (Feltz & Landers, 1983; Hall & Erffmeyer, 1983; Suinn, 1976).

Another way in which people think about the future is to try to predict the future: "Who will win the upcoming election, and what will the country be like in that case?" "Who will win the next Super Bowl?" "What will the stock market do in the next year?" "What is my life likely to be like 5 years from now?" People often engage in such self-generated predictions about the future. Sherman (1980) asked subjects to predict what they would do if they found themselves in several kinds of situations. For example, subjects were asked (in the context of a psychology experiment) to predict whether or not they would agree to volunteer 3 hours of time to collect money for the American Cancer Society if they were called and asked to do so. In one sense, subjects' predictions of their future behavior were very inaccurate. Whereas only 4% of a similar population agreed to volunteer their time when called directly by the American Cancer Society, 48% of experimental subjects predicted that they would agree to such a request if called. In another sense, however, these predictions were accurate. Having made the (mis)-predictions (mispredictions compared to the control group),[3] virtually all subjects who had predicted compliance actually did agree to a similar request to help for charity that was made 3 days later in a situation that was totally unconnected to the original prediction situation. Having made a prediction and having come to hold a certain view of what they would act like in a possible future situation, subjects indeed behaved in a way that was consistent with what they had imagined and what they had predicted.

Greenwald, Klinger, Van de Kamp, and Kerr (1988) asked registered voters in Seattle to predict whether they would vote in an upcoming election. The percentage of subjects who predicted that they would in fact vote was much higher than the actual rate of voter turnout. Greenwald et al. then collected actual voter turnout data. Those subjects who had predicted that they would vote did in fact vote at a high rate, thus rendering their predictions true.

But why were the predictions of subjects in the Sherman (1980) and Greenwald et al. (1988) studies inaccurate relative to the control subjects' behavior? What factors constrained their predictions and prevented subjects from "correctly" judging what they would likely do in a potential future situation? One possibility is that subjects may have failed to conceive of or construe the imagined situation appropriately, as it would actually seem "in real life." For example, in predicting their willingness to donate time to charity, Sherman's subjects may not have imagined the likely possibility of time pressures and alternative plans that they would have that would prevent such a commitment—pressures that they would feel strongly in the actual behavioral request situation. Moreover, subjects may have imagined the pressures for complying with a request to be stronger than they would actually be in the real request situation. These cognitive misconstruals

would lead to a misprediction in the direction of a high compliance rate. Another possibility is that, in a purely hypothetical situation, when no actual effort or commitment is involved, subjects may be more motivated to appear socially desirable (to themselves or to others) than to be accurate in their predictions. They thus tend to make the low-cost, socially desirable prediction. (Social desirability, however, is not a necessary component of situations in which [mis]predictions come to guide future behavior; see Kahneman & Snell, 1988.)

In any case, regardless of why the initial misprediction is made, once subjects think about themselves in a certain way in a possible future scenario, they tend to act in that way when such a potential future actually becomes the present. In other words, certain cognitive and motivational factors constrain the way in which people make predictions about the future. These predictions, in turn, constrain the ways in which people act when the possible future comes to pass. A prediction thus acts as a type of commitment, rendering the subsequent behavior different from what it would have been if people had not thought about and predicted the future. In this way, (mis)predictions can turn into commitments and can alter the course of individuals' own history. The act of predicting the future can, interestingly, free people from the past and leave them *more* unconstrained by the past as they behave in new ways that are different from what they would have done without the act of prediction. On the one hand, then, predictions of the future are constrained by the past through the effects of expectancies, hopes, and wishes. Such constraints can lead to an inability to perceive the world correctly and thus to mispredictions. On the other hand, predictions once made serve a directive function and can free people from the past and lead them in new directions. This is yet another indication of the ways in which the past, the present, and the future collapse into and emerge from each other.

In recent years, there has been much discussion of the predictability of behavior from measures of behavioral intentions. Behavioral intentions are, of course, like behavioral predictions, in that a person is projecting into a future situation and making statements about what he or she will do in that situation. (One difference is that the person may predict behavior without intending for it to happen, as in a prediction of losing a tennis match or not doing well in an exam. In this sense, predictions are like expectations and intentions are more like wishes.)

Fishbein and Ajzen (1980) report that there is, under most circumstances, a strong relation between intention and behavior. In fact, a central methodological assumption in assessing the relation between intentions and behavior is that subjects who do not state their intentions have the same intentions as subjects that do. And yet, in studies on behavioral prediction, the behaviors of prediction subjects were markedly different from the behaviors of subjects who did not state their intentions. Fishbein and Ajzen were correct, however, about the correspondence of "intentions" and behavior for those subjects who did make predictions: Those subjects showed a strong association between what they said they would do and what they later did. High correspondence between intentions and behavior occurred when the stated intentions and the behaviors were obtained from the

same subjects (see Fishbein & Ajzen, 1980, for a review). The prediction studies suggest that such correspondence may exist only when the behavior follows initial statements of intention, and may exist because of these statements. Thus there is a more dynamic interplay among past, present, and future than that reflected in Ajzen and Fishbein's (1970) original model.

As previously mentioned, inability to predict the future may sometimes result from a misconstrual of the future situation or scenario. L. Ross and his colleagues have recently investigated the role of social construals in the accuracy of the confidence that people place in their predictions about the future (Dunning, Milojkovic, & Ross, 1988; Griffin, Dunning, & Ross, 1988; Vallone, Griffin, Lin, & Ross, 1988). In their studies, subjects predicted the actions of their peers, their roommates, and themselves in a variety of hypothetical situations. For example, subjects made yes or no predictions about dropping courses, voting, breaking up with a boyfriend or girlfriend, and calling their parents a certain number of times during the semester. Subjects also indicated probability estimates reflecting their confidence in the accuracy of their predictions. Overconfidence was prevalent; that is, achieved levels of accuracy were far below the levels of confidence expressed. Like other investigators (Lichtenstein, Fischhoff, & Phillips, 1982), Ross and his colleagues demonstrated a lack of accurate calibration between subjective confidence and objective accuracy in predictions. Clearly, because people tend to act on things that they are confident about, overconfidence can be quite costly.

The fact that confidence exceeded accuracy, especially in cases where subjects were highly confident about their predictions, informs us about some of the constraints that may act on people's views of the future. Subjects seem constrained by their expectancies. Alternatives to events and acts that are likely are difficult to generate, and subjects predict that the future will be like the past. They appear to predict a future that is too normal, a future that is less surprising than it actually will be. That is, they predict a future where highly probable events occur too often and improbable events occur too infrequently. Even in attempting to generate random sequences, people fail to stray far enough from what is normal and expected (Kahneman & Tversky, 1972). Inertia prevails. Such a constraint may be related to the role of the anchoring and adjustment heuristic in overestimating the likelihood of high-probability conjunctive events and underestimating the likelihood of low-probability disjunctive events (Bar-Hillel, 1973). Even when the current situation is extreme, people make nonregressive predictions and believe that the world will continue to be as it is (Kahneman & Tversky, 1979).

We have seen how the act of (mis)prediction in itself can direct and determine the future. Similarly, overconfidence in predictions of the future can direct and constrain the future and can keep the future in line with the predictions. However, both in the case of predictions and in the case of overconfidence about the future, this directive and constraining function can occur only in the case of the future over which one has control. For example, predictions about one's own futures over which one has control. For example, predictions about one's own future charitable acts or one's voting behavior, or overconfidence in not breaking up with a boyfriend, can have an impact on these behaviors. However, predictions

about the weather or about the outcome of an upcoming boxing match, or predictions about the behavior of others whom one cannot influence, cannot constrain the future. Some kinds of predictions can affect the future indirectly through the process of self-fulfilling prophecy, as when people predict a stock market crash and act in ways that increase the likelihood of a crash. (Over)confidence for controllable versus uncontrollable future events may have different functional consequences. For controllable events, the confidence may be well placed because one can change the future, and overconfidence may simply represent a misperception of how much one really wants to work to bring about a particular future. Overconfidence for uncontrollable events is less justified; rather than having the consequence of altering one's behavior, such overconfidence may simply make one a poor decision maker (as when a person backs out of a parking space without looking because he or she is overconfident that no other cars are coming).

Even though people are overconfident in their judgments of the future, such overconfidence may still lead to futures that are different and that occur more often than would have been the case without the expressions of confidence. Thus, overconfidence can increase the likelihood of circumstances and actions, even though the likelihood of such actions is still below the level of confidence. In addition, the act of expressing one's level of confidence in a prediction may operate above and beyond the act of predicting the future in its effects on determining that future.

Ross and his colleagues interpret their findings of overconfidence as indicating a tendency toward dispositionalism—inferring the dispositions of the actor and overestimating the impact of dispositions relative to situational pressures. In this sense, overconfidence is a result of the fundamental attribution error (Heider, 1958; Jones & Davis, 1965; Ross, 1977), because judges believe that knowing what people are like is reason enough to be very confident in their predictions. In addition, and related to the previously discussed explanation for mispredictions, the studies reporting overconfidence in judgments of the future suggest that subjects made predictions on the basis of construals of what the future would be like and that they failed to make adequate inferential allowance for the great uncertainty that ought to be associated with such construals. This uncertainty about how actors will actually attach meaning to a real situation should be reflected in more conservative confidence estimates, and a failure to do this is the reason for overconfidence (Griffin et al., 1988). Overconfidence related to dispositionalism may also help account for why people are particularly shaken by "uncharacteristic" behavior of someone they know well.

This failure to take into account the many possible construals of the future is related to our previous discussion of veridicality in memory and judgments about the past. In the first place, people rarely consider that their memories of the past may be inaccurate and that there is some likelihood that alternative pasts were actually true. That is, they do not generate several possible pasts, each with an associated likelihood. Rather, people take their memory of the past as what must have happened. In addition, both the past and the future are open to multiple

interpretations, and judgments in both cases are subject to the problems of interpretation and appearance. Failure to recognize the possibilities of alternative construals of the past and of the future may lead to overconfidence about them, which can create both intrapersonal and interpersonal problems.

Perhaps people tend to think of the truth in too rigid a way. Believing that there was and is one truth may lead them to view the past as inevitable in hindsight and to have overconfidence in the one truth that will emerge in the future. In actuality, many possibilities are the truth before anything happens. In addition, assigning a high likelihood to an event that actually is highly probable is the truth prior to the occurrence—even if the likely event fails to occur. Similarly, the truth about the past (at least subjectively) should consist of many possibilities, because people should be aware of the likelihood of reconstructions and faded memories. Yet they are all too confident that they know the truth both about the past and about the future.

Moreover, a realization that there are many possibilities in the future means that the truth before an event is quite different from the truth after an event. The judgment of the quality of a decision should not be guided by the outcome that occurs. Good decisions (based on the truth at the time) can end in bad (but a priori unlikely) outcomes. And yet people have a strong tendency to rate the thinking as better, to rate the decision maker as more competent, and to be more willing to yield to future decisions by this person when the outcome is favorable—regardless of the "truth" of the decision prior to outcome knowledge (Baron & Hershey, 1988).

Overconfidence effects may be produced by dispositionalism and a failure to allow for uncertainty associated with situational construal, even when people have little at stake in a prediction. However, it is likely that motivational factors often play a role in overconfidence. For self-prediction items, subjects show overconfidence in the direction of desirable outcomes. For example, subjects are too certain that a current romantic relationship will not end in the near future. Overconfidence in items such as this may result from faulty construals in the service of strong desires. We suspect that most people would be overconfident about not contracting a fatal disease, about not getting divorced, about not having children with birth defects, and about not dying in the near future. In support of this, Weinstein (1980) reported that estimates of the likelihood of contracting diseases such as diabetes or cancer were far too optimistic. Perloff (1983) found similar overoptimism about not developing illnesses such as venereal disease and alcoholism. Subjects were most optimistic about their own lack of vulnerability and were more optimistic about friends than about strangers. Perloff and Fetzer (1986) refer to this effect as the illusion of "unique invulnerability."

These motivations for having a healthy and happy life in the future may lead people to be biased toward imagining and daydreaming about good things in the future (with the exception of depressed people; Alloy & Ahrens, 1987; Crocker, Alloy, & Kayne, 1988; Kuiper & Olinger, 1986). Such biased imaginings may in turn lead to an increase in the accessibility and ease of construction of good futures, and this increased accessibility may then lead to further confidence in

good future outcomes. Thus, motivational and cognitive factors may combine to determine the overconfidence that people exhibit in certain predictions of the future. As noted before, such illusions of well-being, although capable of creating problems and disappointments, may be extremely important in keeping people happy and mentally healthy (Taylor & Brown, 1988).

Interestingly, the imaginings of depressed people may also be biased, but in a pessimistic rather than an optimistic way. These biased views of the future may indeed play a role in the etiology and maintenance of depression. In addition, realistic views of the future may prevent depressed individuals from developing the healthy (but unrealistic) optimism of their nondepressed counterparts (Alloy & Abramson, 1979). In support of this, Alloy and Ahrens (1987) reported that depressed individuals made more pessimistic predictions of the likelihood of future outcomes than did nondepressed individuals. In addition, whereas nondepressives showed a self-enhancing bias in overestimating probabilities of future success and in underestimating probabilities of future failure, depressives did not show either positive or negative biases in prediction. Differences in social comparison processes and attributional style are implicated in the differences in judgments of the future by depressive and nondepressives. Just as depressed and nondepressed people make different judgments about the future and bias their imaginings of the future in different ways, we have seen parallels in how these populations remember and reconstruct the past. The kinds of autobiographical memories retrieved by depressed people differ from those retrieved by nondepressives (Williams & Dritschel, 1988). These biases concerning both the past and the future may be in part responsible for dejection among depressives and healthy optimism among nondepressives.

Faulty perceptions of the future are thus apparent in the effects of imagining and explaining hypothetical future outcomes and in the effects of predicting the future. In addition, these erroneous views of the future, once they emerge, have effects on subsequent behavior and tend to persist. It is difficult to alter such judgments once they are made (Ross, Lepper, & Hubbard, 1975). Interestingly, the one manipulation that seems to be effective in eliminating these errors in judgment concerning the future is the same for cases of overconfidence and for the effects of explaining hypothetical future events. With regard to the former, Griffin et al. (1988) had a group of subjects consider alternative construals of potential future situations. These subjects were far less likely to exhibit overconfidence in their judgments of the future. Similarly, Anderson (1982; Anderson & Sechler, 1986) has demonstrated that the biasing effect of explaining a hypothetical event or a relation between variables can be dramatically reduced by having subjects engage in a counterexplanation task, in which the opposite outcomes or relations are explained. These findings indicate that, in thinking about the future, people generally do not consider the entire spectrum of possible outcomes. It is these failures to entertain the entire space of possibilities that are in large part responsible for subjects' misperceptions of and mispredictions about the future. In the preceding section of the chapter, we have noted that similar failures to recognize the range of possibilities in the past may occur, as when people engage

in truncated searches for the causes of past events (Shaklee & Fischhoff, 1982) or fail to consider alternative interpretations of past events. Whether such failures are due to cognitive or motivational factors, some apparently can be remedied by forcing people to think about many possible futures rather than dwelling on the one that is most accessible or most desirable. People may similarly develop a more veridical view of the past from considering alternative versions of past events.

Thoughts about the Self

Although a good deal of our thinking about the future involves the external world around us (e.g., "What will transportation be like in 20 years?" or "What team will be the next football dynasty?") and involves other specific individuals (e.g., "How will the new president change over the next 4 years?"), clearly the bulk of our thinking about the future and our most important thoughts about the future involve the self. We are especially likely to think about our goals and about ourselves approaching and realizing these goals or failing to attain them. According to Markus and Nurius (1986), these goals occasion the construction of "possible selves" that may be different from the present self. Goals will serve as effective guides to present behaviors only if we can create and sustain effective possible selves.

Possible selves are thus our self-generated imaginings of what we could be like in the future. They are, according to Markus and Ruvolo (1989), the future-oriented components of the self-system—"what I might become," "what I would like to become," and, importantly, "what I am afraid of becoming." Possible selves impart structure and meaning to our personal futures in areas that are important to us. As with our other kinds of predictions and imaginings of the future, Markus sees important constraints on our generation of future possible selves. Because possible selves derive from our current involvements, expertise, limitations, and expectations, we are somewhat limited in our ability to imagine certain future possibilities. In addition, recent experiences, moods, or concerns can render different possible selves (e.g., a positive possible self or a feared self) dominant at any moment in time. The ease of imagination of any possible self is also a factor in the strength of representation of that self, in judgments of the likelihood of future possibilities, and in the impact on behavior. Increased subjective probabilities of becoming a possible self in the future should then be associated with increased effort toward realizing that possibility (Feather, 1963; Zajonc & Brickman, 1969).

Possible selves, as imaginings of the self in a future state, are important because of their role in goal-directed action. Thoughts, images, and senses of the self in the future are important cognitive–affective elements that incite and direct goal-relevant action. They are at the heart of motivation and action in the present. In this sense, just as our present self constrains our thoughts about the future, these thoughts about the future, in turn, have important effects on our present thoughts and actions.

Markus and her colleagues have shown some empirical consequences of possible selves. Ruvolo and Markus (in press) used guided imagery to activate

either positive or negative possible selves. Subjects were asked to imagine themselves in the future as they succeeded or failed at a task as a result of either luck or hard work. The accessibility of one or the other type of possible self very much affected persistence at a task, as well as time taken to respond to things that would be possible for the self in the future. The similarity of these findings to those of Sherman et al. (1981), discussed earlier, should be noted.

Health researchers have proposed that thoughts and feelings about the future self and the representation of possible selves may play an important role in recovery from mental and physical illness. For example, Simonton, Matthews-Simonton, and Creighton (1978) found positive health effects of imagery in the treatment of cancer (but see Angell, 1985, for an opposing view). Simulating situations in the future can result in feelings of control and optimism. Taylor and Brown (1988) argue that optimism about the future (even unrealistic optimism) is characteristic of normal thought and that these illusions about the future are important for mental and physical health, happiness, and productivity. The existence of possible selves is also extremely important in our ability to cope. Unexpected events (events for which possible selves have not been considered) are the most difficult to cope with. Possible selves serve as a resource when stressful times arrive. They do this in two ways: by preparing us in advance to deal with the stressful situation while maintaining our current identity, and by allowing the easy construction of alternative life possibilities in a time of change, as when a job is lost (Markus, Cross, & Wurf, in press).

In cross-sectional and longitudinal studies of the role of possible selves in delinquency, Oyserman and Markus (in press) reported important differences between delinquent and nondelinquent adolescents. The best predictor of delinquency was the degree of balance in possible selves between hoped-for and expected selves on the one hand and feared selves on the other hand. "Balance" was defined as the extent to which expected positive selves were offset by countervailing feared selves in the same domain (e.g., expecting a well-paying job in the future but fearing unemployment). Delinquent youths had asymmetries in their configuration of possible selves; there was little balance between their expectations and hopes and their fears. This aspect of possible selves was a better predictor of delinquency than were current levels of self-esteem. Again, thoughts and images about the future may exert important effects in motivating current behavior.

With regard to hopes and wishes about the future, Higgins (1989b) has introduced some novel considerations. In his earlier work, Higgins (1987) developed a self-discrepancy model. This model predicts that certain negative affective states result from discrepancies between a person's cognitive representation of his or her actual self and certain self-guides. The self-guides consist of the "ideal" self (hopes, aspirations, and wishes) and the "ought" self (duties, obligations, and responsibilities). In particular, discrepancies between the ideal self and the actual self lead to depression, whereas discrepancies between the ought self and the actual self bring about anxiety.

In his more recent work, Higgins (1989b) considers not only the present

state of the self, but a person's thoughts about his or her future selves. The "can" self refers to a person's perception of his or her potential and capability. The "future" self is the person's perception of what he or she will actually become in the future. Higgins considers the implications of relations between the ideal self and the can and future selves. When the ideal is better than the can self, that ideal is a dream, not a potential. When the ideal self equals the can self, the ideal is realistic. Chronic discrepancies between the actual and ideal selves are worse and produce more negative emotions when the ideal self equals the can self than when the ideal self is better than the can self. An unfulfilled potential hurts more than an unfulfilled dream. With respect to the future self, when the ideal self is greater than the future self, the ideal exists as a wish, a desirable end state that one does not expect to attain. When the ideal self is equal to the future self, the ideal exists as a hope, a desirable end state that one expects to achieve. Chronic discrepancies between the actual and ideal selves are worse for hopes than for wishes.

In short, unfulfilled potential and unmet hopes are more closely related to depression than are unfulfilled dreams and unmet wishes. In this way, Higgins has shown that emotional vulnerability is not simply a function of the discrepancy between one's present actual self and ideal self. One's conceptions of and predictions of the future self play a moderating role in causing negative emotional states. These can and future selves are, of course, subject to the same kinds of cognitive and motivational constraints that we have discussed previously.

Thoughts about What Might Have Been

Up to now, we have considered instances in which people think about the future itself. Either because they think about a particular future (as in the work concerning explaining and imagining hypothetical furture events) or because they self-generate potential futures as they plan, set goals, and simply daydream, people have thoughts about what the world will be like in the days and years to come. However, thoughts and feelings about the future and preparations for the future are not always achieved in such a direct way. Often people think about the present or the past, especially about alternatives to how things are or were, and such thoughts affect how they feel and how they think about and prepare for the future. Thinking about the past and present can open up possibilities for the future as well as close such possibilities.

For example, "counterfactuals" are mental simulations of alternatives to preceding and current events (e.g., thoughts about how an automobile accident might have been avoided "if only. . ."). According to Kahneman and Miller (1986), the experienced facts of reality evoke counterfactual possibilities, and the facts of reality are compared to these possibilities. These counterfactuals are postcomputed representations that are not held prior to an event but are generated post hoc. Whereas precomputed representations focus on what was expected or what should have been, postcomputed counterfactuals focus on what might have been (Miller, Turnbull, & McFarland, in press). The accessibility of counterfactuals (or of facts that would ease the generation of certain counterfactuals) is the major determinant

of the alternatives to reality that are constructed (Kahneman & Miller, 1986). As such, counterfactuals, like memories of the past and predictions of the future, are determined by the characteristics of the evoking stimulus event and by the momentary mental and physical context in which the event occurs. There are thus clear constraints on the generation of counterfactuals.

In a sense, the past and the future are both alternatives to present reality. Counterfactuals are also alternatives to reality, but they do not necessarily reside in the past, the present, or the future. They are simply other possibilities to events that have happened or are happening. It may even be useful to think about counterfactuals to the future if a particular future seems so likely that it is virtually accepted as truth. Alternatives to expected, hoped-for, and dreaded futures also may be evoked in certain circumstances.

From the point of view of the present chapter, counterfactuals are important because they have implications for feelings, judgments, and future behaviors. Counterfactual generation can prepare us for maintaining our beliefs in the future; for coping with an uncertain, unexpected, or stressful future; and for paving the way for changing in the future.

Some of the work on counterfactual generation suggests that there are constraints on what will be generated. Certain aspects of reality are more easily changed than others in order to arrive at a counterfactual representation. Recent work suggests that exceptional features are more mutable than routine features (Hofstadter, 1985; Kahneman & Tversky, 1982; Wells, Taylor, & Turtle, 1987; but see Wells & Gavanski, 1989, for an alternative view); that changes toward an ideal are more likely than deteriorations (Read, 1985); that alternatives to effects are more easily generated than alternatives to causes (Kahneman & Miller, 1986); that focal items are more mutable than nonfocal items (Read, 1985); and that prior events and primary causes are more mutable than more recent events (Wells et al., 1987).

Aside from the question of which counterfactuals are likely to be generated, other work has addressed the question of the effects of counterfactual generation. In general, emotional responses to an event are more extreme to the extent that counterfactuals that have a very different evaluative impact from that produced by the event itself are easy to generate. Thus, one feels worse about negative events that easily generate positive counterfactuals, and one feels better about positive events that easily generate negative counterfactuals (Gleicher et al., in press; Landman, 1987). Similarly, because it is easier to imagine abstaining from an action than carrying out an action that was not performed, consequences of actions, as opposed to inactions, evoke stronger emotional reactions (Kahneman & Tversky, 1982).

It follows from this work that the abnormality of a victim's fate affects the sympathy and amount of compensation given to the victim, because it is easier to generate alternatives for an abnormal event (Miller & McFarland, 1986). Thus, victims who suffer in abnormal circumstances (e.g., victims who are injured in a store that they rarely frequent, as opposed to one that they often shop in) are extended more sympathy and are compensated more for their victimization. In a

related way, people who narrowly miss out on good fortune are derogated—a stronger reaction when actions are exceptional and alternatives come to mind easily (J. T. Johnson, 1986). Finally, factual events are judged as causes to the extent that alternatives to those events that would have led to other outcomes are easily generated (Wells & Gavanski, 1989).

Counterfactuals are thus important in determining affective reactions to actual events and to judgments of responsibility and causality. (Perhaps one reason why we are more angered by betrayals by people we trust than by people we do not trust is that we can so easily imagine trusted people as behaving otherwise.) More than this, counterfactual generation is important because it affects the ways in which we think about the past and about the future. Without considering alternatives to reality, we must accept the past as having been inevitable and must believe that the future will be no different from the past. The generation of counterfactuals gives us flexibility in thinking about possible futures and prepares us better for those futures. Along these lines, Taylor and Schneider (1989) have proposed a theory of coping that focuses on the mental simulation of past, future, and hypothetical events. Such event simulation serves problem-solving and emotion-regulating functions for stressors by increasing the perceived validity of the imagined experiences, providing a framework for organizing experience, and providing a mechanism for mustering helpful emotions. In this way, counterfactual generation and the mental simulation of events can help in coping with ongoing, anticipated, or past stressful events.

It is thus clear that after-the-fact counterfactual reasoning affects feelings and judgments about the past, the present, and the future. Before-the-fact reasoning, in the form of expectancies, hopes, and wishes, likewise affects these feelings and judgments, as we have seen.

Strategies for Seeking and Evaluating Information

Information-gathering strategies in the service of hypothesis testing represent another set of processes in which consideration of the present has important effects on how one thinks about and prepares for the future, and can very much constrain that future. A number of researchers (e.g., Baron, Beattie, & Hershey, 1988; Klayman & Ha, 1987; Snyder & Swann, 1978) have suggested that when people test a hypothesis, they tend to seek out hypothesis-confirming information—information about characteristics that are more likely to be present if the hypothesis is true than if it is false. This preference for information that has a high probability of a positive result given the assumed hypothesis is referred to as "hypothesis confirmation bias" by Snyder and Swann (1978), as "congruence bias" by Baron et al. (1988), and as "positive test strategy" by Klayman and Ha (1987). In addition, subjects seem to seek information about aspects of the hypothesis that are extreme (either extremely likely or extremely unlikely; Skov & Sherman, 1986).

Skov and Sherman (1986) further note that this pattern of information seeking, combined with an insensitivity to the differential information value of

various answers to the questions, often leads to overconfidence in the original hypothesis (Slowiaczek, Klayman, Sherman, & Skov, 1989). People thus end up perceiving (at a future time) that the world they originally believed in is actually true—that their hypotheses were well justified. It is interesting to note that our previous discussion of hindsight bias has indicated that people believe, in retrospect, that their views of the world were correct all along. Biases in information seeking and information use further ensure that people will continue to believe in the goodness of their hypotheses in the future. This makes it difficult for people to change their minds or alter their beliefs in the light of subsequent evidence.

These biases in information seeking and use may have both cognitive and motivational components (Higgins & Bargh, 1987; Slowiaczek & Sherman, 1987). People may prefer to seek particular information by asking only certain questions, because the answers to these questions are cognitively easier to process. For example, questions about the hypothesis rather than about the alternative (especially where a "yes" answer confirms the hypothesis) may be easier to process, because fewer transformations of the feedback are necessary for making inferences. It is also possible that certain questions are asked in a motivated attempt to make certain undesirable errors in judgment less likely to occur. That is, one may prefer to ask questions where the false rejection of a desirable a priori hypothesis is far less likely that the false acceptance of this desirable hypothesis.

People not only seek information in a biased fashion, but they may actually try, consciously or unconsciously, to control the "facts." For example, people want to believe that they are healthy now and will remain healthy in the future. They are likely to avoid, defend against, and misinterpret any evidence to the contrary. Thus, even when current objective indicators are unfavorable, people may distort their perceptions in order to maintain their beliefs and wishes about their health. Moreover, they may even try to manipulate the facts of the present in order to allow a belief in a healthy future. For example, a person who is concerned with high blood pressure during a visit to the doctor may try to relax prior to having blood pressure measured and may take several deep breaths. This may temporarily reduce (high) blood pressure, allowing the person to continue to believe in his or her health.

Quattrone and Tversky (1984), in fact, tested such a possibility empirically. In one of their experiments, they had subjects immerse their arms in ice water before and after exercise. Some subjects were led to believe that a long life expectancy was associated with increases in tolerance to ice water after exercise, and some subjects were led to believe that a long life expectancy was associated with decreases in tolerance. As predicted, subjects changed their tolerance in the direction correlated with a long, healthy life. Of course, if subjects had recognized the strategic nature of their behavior, such an action would not have been effective in giving them optimism about the future. When a behavior is chosen simply because it is correlated with (diagnostic of) a favorable future outcome, it should logically yield no information that such a favorable outcome is likely to occur in the future. However, subjects failed to recognize that they had "cheated" on the medical examination, and they deceived themselves into believing that the results of the test were indicators of a better future.

Similarly, Kunda and Sanitioso (1989) have demonstrated that the content of people's self-conceptions at any time is affected by the perceived desirability of various attributes. Subjects who were led to believe that a given attribute (extraversion or introversion) was predictive of academic success saw themselves as having higher degrees of that attribute. The authors argue that motivation provokes such changes in temporary self-conceptions by guiding the memory search to select those aspects of the self that are in fact consistent with a view of self that is predictive of a brighter future.

Kunda (1987) also showed how optimistic health beliefs can be maintained through self-serving biases in the evaluation of evidence. High and low caffeine consumers were told about possible future health risks due to caffeine use. High users were more likely to disbelieve the evidence, especially when the health risks were relevant to their gender and were serious in nature. Thus, it appears that people are motivated to evaluate and believe scientific theories differentially, depending upon the theories' implications for their own future.

Gilovich (1983) has also suggested that people will bias their views of current evidence in order to maintain a desired self-conception in the future. Gamblers represent a population that is consistently confronted with failure, and yet these people persist in gambling and persist in believing that they are competent gamblers and good decision makers. Gilovich analyzed the reactions of winners and losers of a gamble concerning a basketball game. The game involved a salient and important fluke play toward the end of the game. Losers used this play as an explanation for their loss, whereas winners did not attach much importance to the fluke play. Thus, both winning and losing subjects were able to maintain their beliefs in their gambling ability, and this would allow them to gamble confidently in the future. Of course, reconstructions of past gambles and a focus on past wins and successes rather than losses are related ways in which gamblers are able to maintain beliefs in their gambling ability.

It is thus clear that people's explanations and understandings of the present and of the past can help them to prepare for the future, and that these explanations determine how good such preparation will be. These attempts at explanation and understanding have been seen as people engage in generation of counterfactuals (Kahneman & Miller, 1986), as they generate theories to make sense of the world (Kunda, 1987), and as they engage in causal reasoning (Gilovich, 1983; Wells & Gavanski, 1989).

Interestingly, some of these attempts at explanation make people feel worse about a current negative situation but are beneficial for better preparing them for the future, so that similar negative situations are less likely to recur. For example, generating a positive counterfactual to a negative event makes one feel worse about the event (Kahneman & Miller, 1986). However, the realization of positive alternatives should make these positive outcomes more likely in the future. Likewise, the losers in Gilovich's (1983) study who focused on the fluke play no doubt felt worse about their "undeserved" loss; however, such perceptions allowed the maintenance of a positive self-view in the future. Findings concerning the reactions of rape victims (Janoff-Bulman, 1979) and of paralyzed victims of freak

accidents (Bulman & Wortman, 1977) make a similar point: Victims who engaged in characterological self-blame ended up coping better with their traumatic experience, although blaming themselves may have made them feel worse about the incident itself. Self-blame gives one a feeling of more responsibility for the current event, but also gives a possibility for personal control of the future—similar events can be avoided.

On the other hand, certain mental constructions and attempts at explanation seem to leave people feeling better about themselves in the present, but perhaps at the cost of leaving them ill prepared to deal with events in the future. Hindsight bias (Fischhoff, 1975) has this flavor. Falsely believing that one understood the present before it occurred makes one feel smart and in control. However, such hindsight bias makes it difficult to learn from mistakes and ensures that one will continue to think about the future in the same error-prone ways. Similarly, Kunda's (1987) subjects who generated theories in a self-serving manner no doubt felt optimistic about the future and enhanced their current good feelings. However, such faulty theory construction may have left them vulnerable to unhappy surprises in the future.

Aside from theory construction and causal reasoning, there are other general processes by which people maintain positive views of the self in the future. Tesser and his colleagues (Tesser, 1986; Tesser & Campbell, 1983) have shown how the motivation to maintain positive self-evaluation guides judgments and guides the interpretation of information. For example, people will reduce the perceived relevance of tasks on which they are outperformed by others. Self-handicapping represents a similar kind of motivational process: Positive but tenuous self-images are sustained in the future by adopting behaviors that can serve as excuses for possible upcoming failures (Arkin & Baumgardner, 1985; Berglas & Jones, 1978). Thus, partying the night before an important exam or taking a performance-inhibiting drug prior to a task allows the maintenance of a positive self-concept in the face of possible failure.

Constraints on Imagined Futures

Most people seem to be motivated to attain or maintain a future self that is healthy, competent, happy, and successful. Subjects have been shown to bias their interpretations of past and current events and even to manipulate the current situation (as in self-handicapping or biased information search) in ways that allow them to maintain beliefs in a happy future and even to make a better future more likely by setting up constraints that will operate on that future. However, we have also seen cognitive processes that are involved in these biases and in the setting of situational constraints. In the first place, even when motives to be happy and healthy in the future lead to certain judgments and biases, people must still be able to make their judgments on the basis of reasonable inferential principles and must be able to maintain an illusion of objectivity about the way in which the judgments are made. The usual cognitive and reasoning processes underlying proper inference and judgment must be maintained. Any effects of

the motivations must thus be subtle and difficult for both the self and others to detect. This means that the ability of motivation to have an impact on judgment and inference is constrained by plausibility and reality. Just as people are constrained by plausibility in their constructions and reconstructions of the past, in a similar way they cannot simply envision any old future. There are what we might call "reality-checking" processes that evaluate the reasonableness of imagined futures, just as there are reality-testing processes that evaluate current perceptions and reality-monitoring processes that evaluate memories (Johnson, 1988a).

Reality constrains constructions of the future. In fact, the reality that serves to constrain our generation of possible and likely futures is the past. It is the past that supplies expectancies and determines what is plausible. Without the past and the reality-checking processes that evaluate imagined futures against the backdrop of the past, people could make up and visualize any future. However, without a past, there could be little sense of a future because the feeling of a continuous, coherent, and meaningful life would be gone. Interestingly, dense amnesia may be accompanied by little sense of the future (Tulving, Schacter, McLachlan, & Moscovitch, 1988).

We may thus think of the future as a gradual construction of the past. At any moment in time, we can think about how things will be, based on the constraints set by the past. However, as each new event occurs, it interferes with this evolution of the past into the future and requires that we reconsider and reconstruct the future so that it takes into account the new aspects of the past. The unfolding of events in the present thus alters both our past and our future.

If happy, healthy, and successful futures are thought about more than failures and sad futures (in planning for and preparing for the future), these happy futures are more likely to be accessible. This, in turn, would affect the judgment of the likelihood of such futures through the availability heuristic. Expectancies for happy futures would also be more likely because of the kinds of encouragements and predictions that are made by friends and relatives. Accessability and expectancies can, of course, determine how current situations are interpreted and how situations are selected. In this way, thoughts about the future can affect judgments and behavioral choices in the present. The present may certainly help to determine the future, but thoughts about the future can also help determine the present, which in turn affects the future.

CONCLUSIONS

At any given moment, cognition is driven by vested interests that affect how we seek out and sample information, how we interpret ambiguous evidence, and how we remember it or use it to predict the future. Some of this mental activity is prompted by motives—our hopes, fears, desires, and needs. That is, cognitive processing may be initiated or sustained in the service of particular motives. But in the absence of defined motives, cognition is not disinterested; schemas, expec-

tancies, inferential mechanisms, goals, and so forth constantly nudge processing in some directions at the expense of others.

Although the schemas and expectancies built up from past experience constitute vested interests, it may nevertheless make sense to think of the resulting biases as unmotivated or "purely cognitive." However, according to the conception of past, present, and future discussed here, it may be arbitrary to distinguish between cognitively produced and motivationally produced bias. First, the mechanisms that are involved are the same, whether they are set off by emotionally toned or less emotionally toned agendas. And second, previous motives may have determined which information was sought out and processed in the past. If so, although a particular motive may not currently be operating, we may pay a price in the present for the operation of that motive in the past. Similarly, we may pay a price in the future for the motives operating now. For example, if fear of rejection causes us to encode or remember selectively now, even if the fear of rejection motive later is inactive, certain information will be selectively more accessible because this information was activated earlier. Thus, it is difficult to separate motivated bias from unmotivated bias in remembering the past and anticipating the future, because the effects of motives may project forward and backward in time.

What we can be sure of is that whether or not they are directly or immediately in the service of ongoing feelings or motives, schemas and expectancies profoundly affect our view of the world and our own place in it, because they determine what we will notice at the time of an experience and what will be easily recalled later. In addition, the difference between a largely apperceptive and a largely perceptual focus at the time of an event (or when subsequently thinking about it) may affect how the event is incorporated into memory (e.g., a child's misbehavior may be remembered as another instance of the child's being malicious or as an event providing information about what situations the child does not know how to handle). Thus, how we think about events may determine whether we later have memories that could support specific learning, efforts to repair self-esteem, or a hopeful view of the future, or whether we have a less functional set of memories such as those characteristic of depressed individuals or attempted-suicide patients.

Schemas, expectancies, and apperceptive-perceptual focus are only the beginning of a long list of potential sources of bias in remembering. We are subject to both mood dependence and mood congruity effects. Our recollection of our past is influenced by our current attitudes and our current theories about whether we are changing or stable with respect to a particular domain. Over time, we may drift toward an observer rather than a participant perspective for our recollections, and the perspective we take may have consequences for whether we see our past behavior as determined by traits or by situations. We may confuse information from various sources, falling prey to misleading information effects or hindsight bias. Some of our most far-reaching errors in identifying the source of information come from failures in reality monitoring. We may confuse what we

imagined with what happened, or count imagined events in estimates of the frequency of actual events. As is true of other cognitive and motivational bias effects, if such reality-monitoring errors sustain nonfunctional schemas ("I always fail") or stereotypes ("Most men do not care about women"), they operate against us. If they strengthen schemas that promote self-esteem and optimism, they may sometimes actually work to our advantage.

With respect to the future, we are also subject to the consequences of our cognitive and motivational processes. Mispredictions about the future derive from mistakes in reality-checking processes, for example, not taking into account base rate data; overconfidence in the probability of high-probability events; a tendency to overestimate dispositional factors and to underestimate the power of situational factors; a failure to take into account that situations are being construed and that there is much uncertainty associated with such construals; hypothesis-confirming strategies; and failures to consider the possible role of imperfect reality monitoring as we use the past to predict the future (including failures to distinguish what we imagined might happen in the future from what actually happened).

Some evidence suggests that we could judge the past and estimate the future more accurately by thinking of alternatives, thus protecting ourselves from overconfidence or hindsight bias. But there is a potential cost to considering all the alternatives: We lose the comfort of not seeing all the possibilities too clearly. For example, our sense of well-being may partly depend on not fully realizing the true probability of such things as divorce or cancer. On the other hand, realizing true probabilities may get us to behave in ways (e.g., reduce tension, quit smoking) that will protect our mental and physical health. Similarly, thinking of how things might have been (counterfactuals) may increase negative affect for bad outcomes as well as increase positive affect for good outcomes. The risk of experiencing powerful negative feelings generated by counterfactual thinking ("If only I hadn't made that thoughtless remark . . .") may be worthwhile if thinking of how things might have been otherwise generates possible alternatives that can be drawn upon if similar situations should arise again.

Thinking about a possible future increases our subjective likelihood estimates for that future. More important, it may also affect subsequent behavior, such as how long we will stick with a task, whether we will be successful at it, whether we will volunteer time for a cause, how our preferences will change, or whether we will vote. These behavioral effects occur because some predictions seem to act like commitments. Whether an imagined possible future self can operate like a commitment may depend on whether it is a dream (and thus not seen as realistic) or a hope (and thus seen as a possible end state). Because acts (including simply imagining something) that we engage in now may change the future from what it might have been, misprediction may become prediction.

In summary, there is no single truth about what was and what will be. A veridical representation of the past or future is one that depicts the entire space of possibilities, appropriately weighted for corresponding probabilities. It is tempting to see the future as open and the past as fixed. But the already-happened past

as remembered consists only of possibilities because of the uncertainty of our own construal of the past, and the yet-to-be past is open to possibilities because we are in the process of constructing it. Conversely, the future may be more fixed than we realize by our failure to see the whole range of possibilities, including the way in which what we do now might reconstruct the future. In this chapter we have suggested some of the ways in which both past and future are open and fixed, and how these qualities of possibility and constraint emerge from an origami-like folding and refolding of past, present, and future as a consequence of cognitive and motivational processes. In this psychological time labyrinth of past, present, and future, our only point of entry is now. What we do now determines what will be the past in the future, and thoughts and actions we take now can reconstruct futures that would otherwise, without our intervention, unfold from the past. As the words from Carly Simon's song "Anticipation" insightfully remind us, the present is the past in the future—"these are the good old days."[6]

Acknowledgments

Notes

1. Many philosophers have struggled with the problem of time (e.g., see the collection of essays edited by Gale, 1968) and have considered such questions as these: To what does time refer? Are there three categories of time (past, present, and future), or only two (before and after)? Is the present a durationless "knife edge" that connects the past with the future? If there is a present, how long is it? In this chapter, we focus on relations among mental activities (remembering, perceiving, anticipating) that are inextricably linked to the concepts of past, present, and future, and that presuppose the functional importance of temporal concepts for defining an autobiographical self. We also assume that, for individuals, the meanings of past, present, and future are context-dependent (much as what constitutes an "event" is context-dependent; e.g., Hanson & Hirst, 1989; Neisser, 1986). For example, the "present" may refer to "11 A.M.-12 noon" if one is eating lunch, to "today" if one is cleaning the garage, and to "this summer" if one is commenting on the state of Hollywood movies. Similarly, whether a recent event (e.g., an argument) is assimilated to the past or present may depend on whether one is now engaged in related activity (e.g., nagging). Nevertheless, in considering the issue of veridicality, we assume that there is some reality "outside" an individual's mental activities to which the activities may (but do not necessarily) refer. Thus, in one sense, past, present, and future arise from cognitive and motivational processes; in another sense, they stand outside these processes.

2. This chapter is not a comprehensive review of the ways in which cognition and motivation affect our sense of the past, present, and future; nor is it an in-depth critical review of any particular factor. Some of the findings mentioned here are controversial, or hold for some situations but not others. Most of the issues mentioned have already been shown to be complicated or will undoubtedly soon be shown to be complicated. Rather, we draw on ideas and evidence from a variety of sources to illustrate the fundamental inseparability of past, present, and future in determining our thoughts and actions.

3. Similarly, we do not discuss the implications of schema effects for theoretical characterizations of the representation of information in memory. For example, it may be that schemas sometimes

operate by filtering out inconsistent information and not allowing it to be stored in memory at all. Or it may be that there are at least two types of representations generated by experience, one closer to the perceptual facts and another that is the consequence of more reflective processing, including inferences based on schematic knowledge (e.g., Alba & Hasher, 1983; Johnson, 1983; Johnson & Raye, 1981; Johnson-Laird, 1983; van Dijk & Kintsch, 1983). According to the multiple-representation view, which representation will be accessed (and whether we confuse the two) may depend on a number of factors, including the cues available, the goals we have, and the criteria we adopt while remembering.

4. In effect, reality monitoring is a set of processes for evaluating the persuasiveness of memories. As in the case of evaluating the persuasiveness of external messages, reality monitoring involves both "heuristic" and "systematic" processing whose relative contributions depend, in part, on what people regard as a sufficient degree of confidence in their judgments (Chaiken, Liberman, & Eagly, 1989).

5. A "misprediction" is a prediction that turns out to be wrong. A "(mis)prediction" is a prediction that is wrong compared to the performance of control subjects who do not make predictions, but that turns out to be right for the subject making the prediction.

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CHAPTER 15

Feelings as Information

Informational and Motivational Functions of Affective States

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A key element in many theories of emotion is the often implicit assumption that "emotions exist for the sake of signaling states of the world that have to be responded to, or that no longer need response and action" (Frijda, 1988, p. 354). Surprisingly, this assumption has received little attention in psychological theorizing about the interplay of affect and cognition. Rather, recent research on emotional influences on cognitive processes has focused primarily on the impact of emotions on the valence of material that is recalled from memory (see Blaney, 1986, and Isen, 1984b, for reviews). Accordingly, studies on the impact of emotional states on reasoning and judgment have been characterized by attempts to trace the observed effects to selective recall.

In contrast to this research tradition, the present chapter focuses on the informative functions of affective states; it is based on the assumption that affective states inform us about the nature of the situation in which they are experienced. The first part of this chapter reviews research on the impact of affective states on evaluative judgments, presenting evidence that is difficult to reconcile with the assumption that emotional influences on social judgment are mediated by selective recall from memory. Rather, the presented research suggests that individuals frequently use their affective state at the time of judgment as a piece of information that may bear on the judgmental task, according to a "How do I feel about it?" heuristic (Schwarz & Clore, 1988). The second part of the chapter extends the informative-functions assumption to research on affective influences on decision making and problem solving, suggesting that affective states may influence the choice of processing strategies. Specifically, it is argued that negative affective states, which inform the organism that its current situation is problematic, foster the use of effortful, detail-oriented, analytical processing strategies, whereas positive affective states foster the use of less effortful heuristic strategies.