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Living in Neither the Best Nor Worst of All Possible Worlds: Antecedents and Consequences of Upward and Downward Counterfactual Thinking

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It was the best of times, it was the worst of times . . .
—Charles Dickens (1859/1980, p. 3)

As the opening line of Dickens' classic novel suggests, it is very often the case that people can imagine both better and worse alternatives to their present reality. Although Dickens was writing about events that occurred over two centuries ago, it remains just as true today that we clearly live in neither the best nor the worst of possible worlds. For instance, we can wish for the amelioration of present difficulties in the Middle East yet still take comfort in the fact that the threat of nuclear war has been greatly reduced since the end of the Cold War. On a more mundane level, it is easy for us to imagine how various aspects of our lives, such as our jobs, marriages, or physical fitness, could be both better and worse. Undoubtedly due to the pervasiveness and intrinsically fascinating qualities of this phenomenon of imagining alternatives to reality, there has been a veritable explosion of research in recent years on what have been termed mental simulation and counterfactual thinking processes.

Most of the important preliminary work in this area focused on the cognitive rules governing what events (or features of events) were more

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likely to be changed, or *counterfactualized*, often referred to as the rules of mutability (Kahneman & Tversky, 1982) or slippability (Hofstadter, 1985). Indeed, this work has told us psychologists a great deal. For instance, psychologists have learned that people are generally more likely to imagine what might have been different about exceptional (i.e., surprising or unexpected) events than about normal events (Kahneman & Miller, 1986; Kahneman & Tversky, 1982) and that the actions people take within a given situation are more readily mutated than the actions people do not take (Kahneman & Miller, 1986; Landman, 1987; but see also Gilovich & Medvec, chapter 9). Because this early work was most concerned with establishing these cognitive rules, little emphasis was placed on the delineation between different types of counterfactuals. Instead, most researchers focused on reactions to failure or negative outcomes (e.g., Landman, 1987; Wells & Gavanski, 1989) because it was assumed that these were the conditions most likely to engender counterfactual thinking.

Research focusing on reactions to failure or negative outcomes is certainly important and fascinating in its own right (e.g., see Gilovich & Medvec, chapter 9). However, we have used something this research has chosen not to focus on as a springboard for our own program of research—the fact that most outcomes that people experience in their daily lives allow imagination of both better *and* worse alternatives. Indeed, we have termed counterfactuals that improve on reality ("... it could have been better") *upward counterfactuals* and those that worsen reality ("... it could have been worse") *downward counterfactuals*. This perspective provides a particularly rich and exciting area of research because, as we will discuss, upward and downward counterfactuals have differential consequences for the individual. In general, we believe that a full understanding of counterfactual thinking requires a consideration of how they might serve people's motives and goal states (see also Roese & Olson, chapter 6). What are the costs and benefits of imagining what could have been?

Before discussing the consequences of counterfactual thinking, however, we first examine what leads people to differentially focus on better or worse possible worlds. We refer to these as the *antecedents* of upward and downward counterfactuals. Specifically, in this first section, we discuss how the ease of imagining different types of counterfactuals can be influenced by (1) The *controllability* of the various features of a particular event, (2) the *valence* of a particular outcome, and (3) the *repeatability* of an event. In the next section, we discuss the differential *consequences* of making counterfactuals and, in so doing, focus on upward and downward counterfactuals in addition to the more general process of undoing events. Specifically, the main focus of this section is on the effects of counterfactual thinking on *affect* and *control* and includes discussions of (1) how

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perceived control is acquired; (2) how the acquired perceived control in turn influences affect; and (3) how the affective response is determined by whether one is simply imagining an alternative as opposed to comparing one's present state to a counterfactual alternative. We should note that these two sections do not comprise an exhaustive review of the literature in this area but rather tend to focus on our own program of research.

ANTECEDENTS OF COUNTERFACTUAL THINKING

Ease of Imagining and the Role of Controllability

A basic tenet of Kahneman and Miller's (1986) norm theory is that it is the ease of one's imagining different outcomes that determines the counterfactual alternatives that are generated. Using a simple scenario about two tennis players, Kahneman and Miller (1986) attempted to demonstrate a person's general tendency to imagine better outcomes more often than worse outcomes. Markman, Gavanski, Sherman, and McMullen (1995) altered this scenario slightly and gave the following version to 27 Indiana University undergraduates:

> Tom and Jim both were eliminated from a tennis tournament, both on a tie-breaker. Tom lost when his opponent served an ace. Jim lost on his own unforced error. Who will feel worse about the match that night?[1]

Tom 0% Jim 100% (N = 27)

Kahneman and Miller's (1986) interpretation of these findings was basically that upward counterfactuals (i.e., Jim's losing on an unforced error) are cognitively easier to generate than downward counterfactuals (i.e., Tom's opponent's not having served an ace). Although this tendency may generally be the case, Markman et al. (1995) suggested that certain factors may influence the ease of imagining different outcomes. Specifically, they advanced a "controllability hypothesis" which suggests that the *controllable* features of an event should have an advantage over the *uncontrollable* features of an event in being mutable because the former are

[1]The original version of Kahneman and Miller's (1986) scenario asked "Who would spend more time thinking about the event?" When Markman et al. (1995) originally created the "downward" version of this scenario, however, participants were confused by this question, so it was changed to "Who would feel better about the match that night?" Thus, Markman et al. made the same change to the original Kahneman and Miller scenario for consistency.

more likely to be the *focus of attention*. In turn, as Kahneman and Miller (1986) themselves suggested, this focus of attention on particular features of an event should enhance the availability of counterfactual alternatives to these features. In terms of the tennis scenario, then, participants might have perceived that Jim, who lost on his *own* unforced error, was more in control of his own outcome than was Tom, who lost when his *opponent* aced him, and thus made more counterfactuals about Jim than about Tom.

Support for this explanation was supplied by the responses of another 27 Indiana University undergraduates to a scenario Markman et al. (1995) created in which Tom and Jim *won* a tennis match under different conditions of personal control:

> Tom and Jim both won the semifinal matches of a tennis tournament, both on a tie-breaker. Tom's winning shot hit the white line, just barely staying in. Jim won when his opponent's shot hit the top of the net and just barely bounced back over to his opponent's side. Who will feel better about the match that night?
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> Tom 78% Jim 22% (N = 27)

Apparently participants once again judged greater affect for the player who had control over the outcome (i.e., Tom, who barely hit the line) than for the other player. This enhanced affect suggests that this time it was easier for participants to generate downward counterfactuals for Tom, whose shot barely stayed in, than upward counterfactuals for Jim's opponent, whose shot almost made it over the net. This finding is actually inconsistent with Kahneman and Miller's (1986) notion that upward counterfactuals are generally easier to produce than downward counterfactuals.[2] In general, then, controllability may exert a good deal of influence on the ease of a person's imagining different outcomes; the focus of attention on one or another feature of a given event may determine whether an upward or a downward counterfactual is made. This hypothesis has particularly important implications because, as we describe in more detail later, the direction of the counterfactual can have affective and motivational consequences for the individual.

[2]One might offer a slightly different interpretation of these effects: Jim experienced relatively more negative affect for his unforced error (first scenario) because he made an *internal* attribution for his *failure*, whereas Tom experienced relatively more positive affect for hitting his shot on the line (second scenario) because he made an internal attribution for his *success* (cf. Weiner, 1985). However, it might have been perceived control over features of these events that led to the internal attributions in the first place.

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The "Wheel-of-Fortune" Study. In a further test of the controllability hypothesis, Markman et al. (1995) placed participants in an experimental situation that had both controllable and uncontrollable features in order to see which were counterfactualized about more frequently. Markman et al.'s goal was not to find a main effect of controllability, per se, on direction of counterfactual generation (see Roese & Olson, 1995) but rather to find whether the controllable features of a given event were more mutable than the noncontrollable features of that event. Thus, they were interested in showing that the direction of the counterfactual could, in fact, be *either* upward *or* downward, depending on what features or aspects of the event were controllable.

Pariticipants played a computer-simulated "wheel-of-fortune" game and saw on the computer screen two wheels that spun simultaneously. They were told that the outcome of one of the wheels would determine how many lottery tickets they would win, and the other wheel would determine the number of lottery tickets won by the other participant who was present (but who was actually a confederate). The game was fixed to result in one of the two following *wheel outcomes*: In the first outcome, the participant's wheel narrowly misses hitting a jackpot of 75 lottery tickets and instead lands on the position for 10 tickets, whereas the other wheel (indicating the outcome of the other player) lands on the "bankrupt" position, that is, the *own (could have been) better–other (was) worse* outcome. In the second scenario, the participant's wheel narrowly misses landing on the bankrupt position and instead lands on the 10-ticket position, whereas the other wheel lands on the 75-ticket position, that is, the *own (could have been) worse–other (was) better* outcome. The participant's own wheel was set to narrowly miss a certain outcome in order to elicit counterfactuals of the form "I *almost* won 75 tickets" or "I *almost* went bankrupt." Kahneman and Varey (1990) termed the simulation of alternatives like these (that is, "almost happened" or had a "propensity" to happen) as *close counterfactuals*. The two wheel-outcome conditions are depicted in Figure 5.1.

Markman et al. (1995) manipulated control by giving some participants a choice of the position where their own determining wheel should start and how fast it should spin (the spin-choice condition), whereas other participants chose which wheel would be the determining wheel for them (the wheel-choice condition) and which would determine the outcome of the other player.

One main prediction was that participants would tend to *focus* on, and thus make counterfactuals about, whichever feature of the game they controlled. Thus, spin choosers would generate more within-wheel counterfactuals (focusing on what could have happened on their *own* wheel, e.g., "Had I started the wheel at a different point . . .") than would wheel choosers, whereas wheel choosers would generate more between-

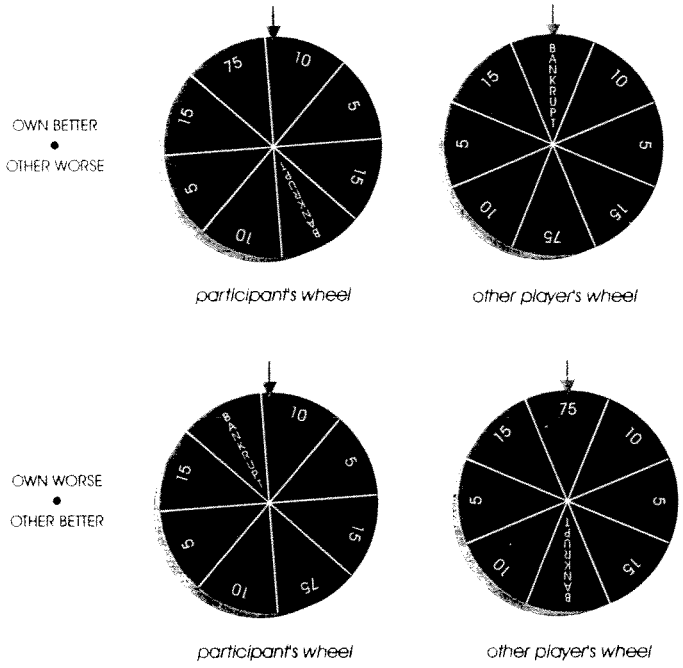

FIG. 5.1. Wheel-outcome conditions.
Note. Copyright 1995 by the Society for Personality and Social Psychology, Inc. Adapted from Markman et al. (1995).

wheel counterfactuals (focusing on what could have happened had the other wheel determined their outcome, e.g., "Had I played on the other wheel . . .") than would spin choosers. In their analysis, Markman et al. (1995) focused on the *first* counterfactual generated (see Kahneman & Tversky, 1982); if a participant's first counterfactual was within-wheel, it was coded as a *+1*, whereas if the first counterfactual was between-wheel, it was coded as a *−1*. Thus, a paricipant's tendency to make within-wheel counterfactuals would be associated with a relatively more positive focus-of-counterfactual score, whereas a between-wheel counterfactual would be associated with a relatively more negative focus-of-counterfactual score. As the results reported in Table 5.1 indicate, there was, indeed, a significant main effect of type of control on the focus of counterfactual generation: Spin choosers generated far more within-wheel counterfactuals (M = .82), and thus far fewer between-wheel counterfactuals, than did wheel choosers (M = 0.18).

A second, and perhaps more interesting prediction, was that the type of control exerted (spin choice or wheel choice) would interact with the wheel-outcome condition to produce the following effects for *direction* of

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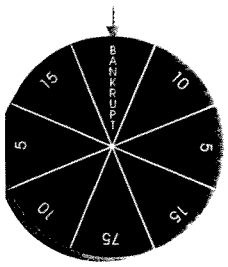

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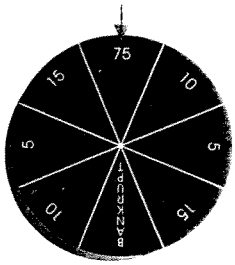

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TABLE 5.1
Focus and Direction of the First Counterfactual Made by Participants

	Control Type	
Wheel Outcome	*Spin Chooser*	*Wheel Chooser*
Focus of First Counterfactual		
Own better/other worse	.91	.17
Own worse/other better	.73	.07
Direction of First Counterfactual		
Own better/other worse	.31	−.23
Own worse/other better	−.43	.20

Note. Positive numbers indicate relatively more within-wheel than between-wheel counterfactuals and relatively more upward than downward counterfactuals. Copyright 1995 by the Society for Personality and Social Psychology, Inc. Adapted from Markman et al. (1995).

the counterfactual: Participants whose own wheel almost hit the 75-ticket position would generate a greater proportion of upward counterfactuals (e.g., "I could have won 75 tickets . . .") if they were spin choosers than if they were wheel choosers. On the other hand, participants whose own wheel almost hit the bankrupt position would generate a greater proportion of downward counterfactuals (e.g., "I could have gone bankrupt . . .") if they were spin choosers than if they were wheel choosers. In their analysis, Markman et al. (1995) again focused on the first counterfactual generated, with upward counterfactuals receiving a *+1* direction-of-counterfactual score and downward counterfactuals receiving a *−1* direction-of-counterfactual score. The results of this analysis (see Table 5.1) indicate that the predicted pattern was obtained; there was a significant interaction between "Control Type" and "Wheel Outcome" on the incidence of upward and downward counterfactuals.

In sum, the specific feature of the game that a participant controlled led to a differential focus on either their own wheel or their opponent's wheel and, in turn, this differential focus seems to have had a predictable impact on the types of counterfactuals that were generated. Apparently, then, controllability is an important determinant of whether an upward or downward counterfactual is to be made. Furthermore, the fact that controllable features are more likely than others to be mutated has important affective and motivational implications for the individual (we discuss these in a later section of this chapter).

Outcome Valence

As we discussed previously, Kahneman and Miller (1986) suggested that it is harder for an individual to imagine how a favorable reality might have been worse (downward counterfactual) than to imagine how an

unfavorable reality might have been better (upward counterfactual). With all things held constant, this may be the case. We suggest, however, that the *valence* of a particular outcome should also exert a powerful effect on the ease of imagining and, thus, have different and predictable effects on the generation of upward and downward counterfactuals.

Other researchers (e.g., Gavanski & Wells, 1989; Gleicher et al., 1990; Landman, 1987) have indeed examined counterfactual generation in response to both positive and negative outcomes. A drawback to this research, however, is that outcome valence was, at least partially, confounded with the ease of generating different kinds of counterfactuals. The basic problem is that only two possible outcomes were explicitly described: Either a favorable, factual outcome was paired with an unfavorable, counterfactual outcome, or an unfavorable, factual outcome was paired with a favorable, counterfactual outcome. Thus, bad outcomes were paired with better, counterfactual *default events* (cf. Wells & Gavanski, 1989), whereas good outcomes were paired with worse, counterfactual defaults. Instead, a stronger test of the effects of outcome valence on counterfactual generation should reflect what is often the true state of nature: Most outcomes that people experience in their daily lives allow the imagination of both better *and* worse alternatives.[3] For this reason, Markman, Gavanski, Sherman, and McMullen (1993) devised an experimental situation in which both types of alternatives were readily available. Additionally, they also set out to examine how outcome valence influences the *spontaneous* generation of counterfactuals; in previous work, participants had been instructed or otherwise directed to produce a specific change to a factual outcome (i.e., to make a bad outcome better or to make a good outcome worse).

Markman et al.'s (1993) predictions stemmed from the perspective that counterfactuals have motivational or functional implications (see Roese & Olson, chapter 6). Consider, for example, the unhappy owner of a "lemon" car who thinks, "If only I had bought a Honda, I wouldn't be at the service station every other week." Although the generation of such an upward counterfactual may devalue the actual outcome and make people feel worse, the simulation of routes to imagined, better realities may help people learn to improve on such outcomes in the future (S. Taylor & Schneider, 1989; Wells, B. Taylor, & Turtle, 1987). Thus, the car owner who thinks "If only I had bought a Honda . . ." may benefit from this counterfactual by learning to buy a Honda (or car of similar quality) the next time. This reasoning actually has its roots in the social-comparison research. Thus, Festinger (1954) believed that the primary purpose of social comparison is accurate self-evaluation: People compare themselves to others in

[3]We do admit, however, that the ease of generating each kind of counterfactual is probably somewhat correlated with the valence of the outcome.

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order to evaluate their opinions and abilities. Furthermore, research findings have shown that people may compare themselves to slightly "better-off" others (i.e., engage in upward *social* comparison) in an effort to *improve* themselves (e.g., S. Taylor & Lobel, 1989; Wheeler, 1966).

On the other hand, consider the student who receives a C– on an exam and thinks, "At least I didn't fail." Such a downward counterfactual may make one feel better: In comparison to the *F* one could have received, a C– seems pretty good (see also Johnson & Sherman, 1990; S. Taylor, Wood, & Lichtman, 1983). Likewise, as reported in the social-comparison literature, Wills (1981) suggested that people engage in downward social comparison in order to protect and enhance their subjective well-being (e.g., "I may have gotten a C– on the exam, but I did better than Bob"). Note, however, that although downward counterfactuals may provide comfort, they might also leave one unprepared for the future; the student who simulates how a C– might have been even worse may be comforted but will fail to identify alternative strategies to improve the grade on future occasions (cf. Roese, 1994).

Given this reasoning, Markman et al. (1993) predicted that under conditions in which both better and worse alternatives were available, outcomes experienced as dissatisfying (negative) would activate a desire for something better and thus stimulate upward counterfactuals, whereas outcomes experienced as satisfying (positive) would lead to the desire to enjoy the outcome and thus would stimulate downward counterfactuals.

The "Blackjack" Study. Because Markman et al. (1993) believed that the scenario paradigms used in previous work were ill-suited for an examination of the motivational implications of counterfactual thinking, they developed a paradigm that allowed them to examine the spontaneous generation of counterfactuals by people in an actual situation involving the self. Specifically, participants played a computer-simulated blackjack game in which the objective outcome was the same in all conditions: Participants tied the dealer's hand and won $5. This allowed all participants the opportunity to make either upward ("I could have won more money") or downward ("I could have lost") counterfactuals.

Participants' perceptions of outcome valence were varied through a *framing* manipulation (see Kahneman & Tversky, 1979). The use of this kind of manipulation enabled Markman et al. (1993) to study spontaneous counterfactual generation in reaction to three differently perceived valences of an identical outcome: positive, neutral, and negative. The three conditions were framed in the following ways:

> Win Condition: Participants started with no money. They were told that if their hands won (beat the dealer's hand), they would receive $20. If their

hands tied (matched the dealer's hand), they would receive $5. If their hands lost (went over 21 or failed to beat or tie the dealer's), they would receive nothing.

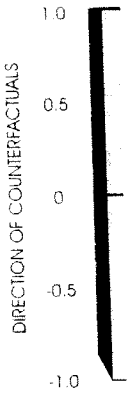
Neutral Condition: Participants were given $5 to start. They were told that if their hands won, they would receive an additional $15. If their hands tied, they would keep their $5. If their hands lost, they would lose the $5 that they were initially given.

Lose Condition: Participants were given $20 to start. They were told that if their hands won, they would keep the $20. If their hands tied, they would *lose* $15 of the $20. If their hands lost, they would lose all $20.

In sum, the potential and actual outcomes (i.e., the net gains) were objectively the same across the win, neutral, and lose conditions. Participants in win frames were predicted to generate relatively more downward counterfactuals, whereas those in lose frames were predicted to generate relatively more upward counterfactuals. Participants' reactions to tying the dealer's hand were vocalized onto a tape recording, producing a rich set of spontaneous counterfactuals which were later coded as either upward or downward, that is, in the same way they were coded in the wheel-of-fortune study (Markman et al., 1995). As the results depicted in Figure 5.2 indicate, the predicted results were obtained (Markman et al., 1993). The main effect of "Outcome Frame" was significant, and subsequent comparisons indicated that participants in the lose frame generated more upward counterfactuals than did those in either the neutral or win frames.

From a functional perspective, then, it might be that people generate upward counterfactuals in response to negative outcomes because of a desire for future improvement, but generate downward counterfactuals in response to positive outcomes because of a desire to enjoy the present. Indeed, the participants in Markman et al.'s (1993) study did feel relatively more satisfied with their outcomes after making downward counterfactuals than after making upward counterfactuals, an effect found recently by a number of different researchers (e.g., Boninger, Gleicher, & Strathman, 1994; Markman et al., 1995; McMullen & Markman, 1994; Roese, 1994). Ironically, however, these findings suggest that upward and downward counterfactuals both hold tradeoffs for the individual: Upward counterfactuals prepare one for the future, at the expense of feeling worse, whereas downward counterfactuals help one feel better, at the expense of being ill prepared for the future.

Recently, in fact, we have been taking a "harder look" at the functionalist perspective by asking the following question: Should not people in negative affective states want to improve on their affect by making *downward* counterfactuals? This tendency would certainly be consistent with the idea that unhappy people often try to engage in *mood repair* (e.g.,



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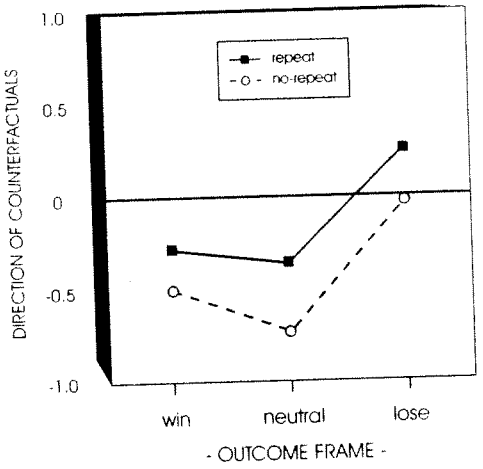

FIG. 5.2. Mean direction of counterfactuals as a function of outcome frame. Positive numbers indicate relatively more upward than downward counterfactuals; negative numbers indicate relatively more downward than upward counterfactuals.
Note. Copyright 1993 by Academic Press, Inc. Adapted from Markman et al. (1993).

Cialdini, Darby, & Vincent, 1973; Singer & Salovey, 1988). Thus far, most of the research examining the relationship between counterfactuals and negative affect has followed a similar series of steps: (1) Participants read about or experience an outcome. (2) They then generate counterfactual alternatives to that outcome. (3) The particular counterfactual generated leaves the participant feeling relatively dissatisfied. Because the measurement of affect is usually the *final* step in these experiments, however, we have no idea whether or not participants later engage in downward counterfactuals in order to try to "get out" of this state. Thus, it might be interesting for researchers to *induce* a mood state and *then* examine the counterfactuals that participants make in response to a given outcome. If a "controlled" mood-repair process were at work, one could predict that participants would generate downward counterfactuals in response to negative events. On the other hand, from the cognitive perspective that inducing a mood makes mood-congruent thought accessible (e.g., Bower, Gilligan, & Monteiro, 1981; Isen, Shalker, Clark, & Karp, 1978; Mackie & Worth, 1989) one might predict just the opposite: A negative mood would make negative thoughts about oneself more accessible, thereby accentuating the contrast between the self and more positive standards of comparison (cf. Schwarz & Bless, 1992). In our laboratory, we are currently conducting an experiment in which mood and outcome valence are orthogonally manipulated, in an attempt to tease apart these issues.

At this point, we are speculating that both cognitive *and* motivational processes might come into play in response to a negative mood or outcome. Indeed, the automatic–controlled distinction (see Shiffrin & Schneider, 1977) that has lately become popular in social psychology may be useful in describing the process whereby counterfactual alternatives are generated in response to negative outcomes or moods. The generation of upward counterfactuals may come first, driven by a quick and relatively effortless process in which the most salient causal agent in a situation is selected for mutation. Over time, however, a more controlled and thoughtful process of mood repair may take over, characterized by a greater incidence of downward counterfactuals. The following example illustrates this process: A college student who receives a C on an exam may be completely obsessed with the thought, "If only I had studied harder. . . ." As time passes, however, the student may begin to see how the outcome could have been even worse. In fact, one's peers and relatives may be some of the most influential sources of downward-counterfactual alternatives (e.g., "Don't be so hard on yourself, you could have done so much worse . . ."). An interesting test of the automatic–controlled notion would be to place participants under cognitive load (e.g., Gilbert, Pelham, & Krull, 1988) after experiencing a negative outcome (or being put in a negative mood) and to observe whether the relative incidence of downward counterfactuals decreased as a result.

As the previous discussion suggests, it is entirely possible that the tendencies of upward counterfactuals being made in response to negative outcomes and downward counterfactuals in response to positive outcomes have much less to do with functionality per se and much more to do with *context*. Thus, the effect of winning or losing, or of experiencing a positive or negative event, may be that the contrasting standard of comparison is made more salient (Schwarz & Bless, 1992), an effect that thereby leads to a focus of attention on one alternative or another (Kahneman & Miller, 1986; Markman et al., 1995). In general, we believe that the influence of various contextual or background features of a situation on the generation of counterfactuals is a fascinating avenue for future research. For instance, it may be possible to make upward or downward alternatives more salient or accessible by either explicit or implicit priming (e.g., Higgins, Rholes, & Jones, 1977; Jacoby, Kelley, Brown, & Jasechko, 1989; Srull & Wyer, 1979). An example of an explicit situational prime might be a recently viewed film. Thus, a man who is vacationing in Las Vegas and loses $200 betting the "wrong" color on the roulette wheel might be more likely to make upward counterfactuals about his performance if he had recently seen a spate of "James Bond" films wherein the protagonist always has remarkable gambling success. Viewing such films creates a prior context of success at gambling and thus renders the concept

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of winning more accessible. On the other hand, if the man had recently seen Eric Roberts' character in *The Pope of Greenwich Village* have his life destroyed because of an inability to pay off gambling debts, the counterfactual alternative "I could have lost a lot more . . ." may be somewhat more accessible for this individual.

Event Repeatability

A closer examination of the functionalist notion that people generate upward counterfactuals primarily to prepare for the future and downward counterfactuals primarily to comfort themselves necessitates a further delineation of the conditions under which each kind of counterfactual might be preferred. Markman et al. (1993) suggested that the potential *repeatability* of an event would provide one such important test of the functionality hypothesis. The following example illustrates this point. People who experience a particular outcome (e.g., a C– on an exam or the purchase of a "lemon" car) and who foresee the possibility of being in a similar situation in the near future (e.g., taking another exam in the course or buying another car) might be expected to generate primarily upward counterfactuals, with the goal of improving on that outcome ("I should have bought a Honda . . ."). On the other hand, for a one-time event (e.g., one's only visit to Las Vegas or one's only time in graduate school), preparation for a better "next time" is not particularly relevant. Thus, the best one can do in such a situation is to try to feel better about it by making a downward counterfactual ("It could have been worse; I could have lost more money"). In sum, Markman et al. (1993) suggested that the potential repeatability of an event is another important factor that influences the ease of imagining better or worse counterfactual alternatives.

Event repeatability was manipulated by Markman et al. (1993) in the following way: Before actually playing the blackjack game, participants in the "repeat" condition were told that the hand they were about to play would be the first in a series of four similar blackjack games that they would play. On the other hand, participants in the "no-repeat" condition were told that after playing one hand of blackjack they would go on to an unrelated task that did not involve gambling. A direction-of-counterfactual score was computed; Figure 5.2 depicts the effects of this manipulation on counterfactual generation: Participants who anticipated playing the game again (i.e., were in the repeat condition) generated relatively more upward counterfactuals than participants who did not anticipate playing the game again (i.e., were in the no-repeat condition).

These results suggest that the repeatability of an event is more likely than a nonrepeatable event to induce the goal of improving on one's outcome in the future, leading one to think about how things might have

been better. On the other hand, the nonrepeatability of an event is more likely than a repeatable one to allow one to see how things could have been worse; for one-time events, preparation for a better future is largely irrelevant. Unlike in our earlier discussion of outcome valence, we are hard pressed to find an explanation for this repeatability effect except one positing that participants were focusing, at least at some level, more on the future in the repeat condition relative to those in the no-repeat condition. Markman et al. (1995) suggested, however, an important limiting condition on this effect, if upward counterfactuals are to have this preparatory function: People must have some degree of control over their actions if such events do occur in the future. Indeed, a recent paper by Roese and Olson (1995) provides support for this idea. In their study, participants made upward counterfactuals when a story character's actions were controllable, but made downward counterfactuals when these actions were uncontrollable. Thus, as with the repeatability effect, people will make upward counterfactuals if they feel that they have some control over actions they might take in the future, but will make downward counterfactuals if they lack such feelings of control.

Recent findings by Roese (1994) provide additional direct evidence for the functionality of counterfactuals. In one study, generating upward counterfactuals increased participants' intentions to perform behaviors that would facilitate achieving success, a result suggesting that upward counterfactuals can provide scripts for the future (e.g., Abelson, 1981). In another study, upward counterfactuals were shown to enhance *performance* on an anagram-solving task, relative to downward counterfactuals. On the other hand, downward counterfactuals enhanced affective reactions to task performance, relative to upward counterfactuals. We believe that the demonstration of a direct link between counterfactuals and behavior is an important step and we hope to see more of such links forged to other behavioral domains (e.g., coping, decision-making behavior) as this research area continues to grow.

There may also be some individual differences in terms of who is most likely to benefit from certain types of counterfactuals. For instance, there may be people who simply tend to focus on better or worse possible worlds, that is, people who are chronically accessible (e.g., Higgins, King, & Mavin, 1982; see also Higgins, 1987) to imagining better or worse alternatives to reality. One such distinction might be drawn between optimists and pessimists. Optimists, who tend to view things from a positive perspective, may be more inclined to make downward counterfactuals in situations in which both better and worse alternatives to reality exist (e.g., "*B*'s aren't bad; you could be getting *C*'s or *D*'s"), whereas pessimists, with their more cynical view, may be more likely to make upward counterfactuals in such situations (e.g., "If only I were getting

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A's; with *B*'s I'll never get into medical school"). Interestingly, the opposite prediction could also be made: Perhaps the optimism of optimists stems from the very fact that they *have* learned how to improve on the past by making upward counterfactuals! Indeed, optimists, by definition, would be more likely than pessimists to believe that they actually *can* improve in the future. Our highly speculative guess is that optimists can strategically make either upward *or* downward counterfactuals, depending on which is most functional, and, furthermore, are more likely to learn from upward counterfactuals because they believe that they can *control* what happens to them in the future. Pessimists, on the other hand, may be "stuck in a rut" of ruminative thought (e.g., Davis & Lehman, chapter 13; Martin & Tesser, 1989; Sherman & McConnell, chapter 7; Tait & Silver, 1989) predominated by upward counterfactuals about *uncontrollable* outcomes, counterfactuals that do not serve any functional value (cf. Markman et al., 1995). Thus, the findings of Roese and Olson (1995) that upward counterfactuals are made predominantly in response to controllable outcomes may be applicable only to those with a more optimistic orientation; pessimists may feel that there is little they can do to control what happens to them in the future. In general, an individual-difference approach to counterfactual thinking (see Kasimatis & Wells, chapter 3) should provide fascinating information about the antecedents of upward and downward counterfactuals.

CONSEQUENCES OF COUNTERFACTUAL THINKING

Acquisition of Perceived Control

In late 1993, then Defense Secretary Aspin offered his resignation because it was learned that he had refused a request for additional armor in Somalia, shortly before the deaths of several American soldiers there ("The Collapse of Les Aspin," 1993). Some suggested that the deaths would not have occurred if Aspin had approved the request. Others argued that "even if he had approved the armor, it probably would have arrived too late" (p. 25), and so the deaths could not have been prevented. Much of the debate focused not on the quality of or reasoning behind the decision that was made at the time but rather on the counterfactual alternatives to the decision. This example clearly demonstrates the power of counterfactual undoing in judgments of causality and responsibility, even at the expense of evaluating the facts that existed before the outcome occurred.

Indeed, findings from research on perceived control have indicated that the facts of actual control over an event are often distorted by the attributions people make (Langer, 1975; Wortman, 1976). Because counterfactuals,

such as those about the Defense Secretary's decision, influence causal attributions (Wells & Gavanski, 1989), self-relevant counterfactuals should influence perceptions of personal causation or control. An individual who believes "if only I had done something differently, things would have turned out better" is implicitly accepting responsibility for the outcome through his or her consideration of counterfactual alternatives.

In three studies, McMullen and Markman (1994) investigated how counterfactual thinking influences perceived personal control and responsibility. In the first two studies, participants were instructed to recall recent events in their lives and to imagine alternatives to those events. In the first study, half of the participants recalled positive events and half recalled negative events, and all were instructed to imagine themselves engaging in whatever counterfactual behaviors or decisions seemed most natural. In the second study, all participants recalled negative events and then imagined counterfactual behaviors that resulted in a better outcome, in a worse outcome, or in the same outcome. In both studies participants coded their own counterfactuals and events for perceived control, affective evaluations, and related measures.

In the third study, participants played a computer-simulated card game, a procedure previously used with success (Markman et al., 1993, 1995). Participants played four simplified poker games; during the course of each game, participants added to their hand one of two cards. The remaining card, the one they could have but did not receive, was the "counterfactual" card. The four games each corresponded to a different counterfactual condition: In one hand, participants saw that they could have done better (upward counterfactual); in another, that they could have done worse (downward counterfactual); in a third, their hand would have been the same with either card (outcome unchanged); and in a fourth game, they were not presented with counterfactual information (no counterfactual). In addition, one third of the participants were assigned one of the two cards by the computer, one third chose their own card, and one third chose their own card by attempting to read the patterns on the backs of the cards. At the end of each hand, participants responded to open-ended questions about the hand and then completed several rating scales concerning affective evaluations and perceived control over the game. The results of these three studies are discussed in terms of five distinct theoretical issues: undoing the outcome, self-focus versus external focus, counterfactual direction, foreseeability, and scenario plausibility.

Undoing the Outcome. The primary assumption about how counterfactual thinking influences causal perceptions centers on the notion of undoing. For an event to be judged causal of an outcome, the counterfactual alternatives to the event must result in different outcomes (Wells &

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Gavanski, 1989). McMullen and Markman (1994) therefore expected that increased perceived control would be related to the extent that participants' counterfactuals undid self-relevant outcomes. In the first study, results of correlational analyses indicated that the more participants' counterfactuals changed the outcomes, the more perceived control participants reported over the event. McMullen and Markman tested this question experimentally in the second study in which one group of participants was instructed to imagine engaging in different actions that did not change their outcome. Compared to this group, participants who imagined changed outcomes reported greater feelings of control. (McMullen and Markman did not find, however, that all types of counterfactuals that undo an outcome increased feelings of perceived control. We discuss these qualifications later in the sections on focus and direction.)

McMullen and Markman (1994) also wanted to examine these effects in comparison to a no-counterfactual control condition. This investigation was crucial, because they expected that control would in fact be influenced by imagining unchanged outcomes, but in the opposite direction. Self-relevant counterfactual scenarios that do not undo an outcome should lead to decreased perceptions of personal control, as in "There's nothing I could have done." To examine this issue, in the third study McMullen and Markman included a no-counterfactual control condition in addition to the outcome-undone and outcome-not-undone conditions. Results supported both hypotheses: Compared to those in the control condition, counterfactuals that undid the outcome increased perceived control, and counterfactuals that left the outcome unchanged reduced perceived control. Thus, an individual who simulates scenarios in which an outcome is undone will feel a corresponding increase in perceived control, but an individual who can simulate only scenarios in which the outcome is left unchanged will feel a corresponding reduction in perceived control. Perhaps these results will encourage researchers' greater attention to the impact not only of counterfactuals that undo outcomes but also of counterfactuals that do not undo the outcome.

Self-Focus Versus External Focus.[4] Of course, not all counterfactuals involve the self, and, therefore, not all counterfactuals lead to attributions of control to the self. In the wheel-of-fortune study (Markman et al., 1995) discussed previously, the focus of respondents' counterfactuals could have been on either external factors (e.g., "If only the computer had assigned me a different wheel"), or on decisions of the self (e.g., "If only

[4]We have not made distinctions among different types of external focus, such as a focus on the situation versus focus on another person, only because we have not included those distinctions in our research to date.

I had chosen a different spinning speed"). Markman et al. found that respondents focused their counterfactual mutations on those aspects of the situation over which they had more control. This pattern should be a functional strategy because attributions to the self should promote feelings of control, whereas external attributions should not. For example, someone who thinks "If only the test were easier, I would have had a better grade" is undoing the outcome, but not through some behavior of her or his own, and therefore should not have enhanced perceived control.

McMullen and Markman (1994) put this idea to experimental test in their third study. One group of participants were assigned their cards by the computer and therefore could not make "If only I had . . ." counterfactuals when they saw the counterfactual card. Rather, paralleling those in the wheel-of-fortune study (Markman et al., 1995), their counterfactuals took the form "If only the computer had assigned me a different card." As expected, there were no significant changes in perceived control due to the counterfactual manipulation in that condition. The only significant changes in perceived control occurred in the other two conditions, in which participants chose their own cards and therefore focused their counterfactuals toward their own decisions.

Whether the counterfactual focus is on the self or on external factors, however, perhaps oversimplifies the issue of personal control. There may be self-mutations that do not influence perceived control. For example, Niedenthal, Tangney, and Gavanski (1994) have made a distinction between behavioral counterfactuals, as in "If only I had . . . ," and characterological counterfactuals, as in "If only I weren't. . . ." They found that the former were related to feelings of guilt, and the latter to feelings of shame. Similarly, we would expect that to the extent participants in McMullen and Markman's (1994) card game study made counterfactuals such as "If only I were better at poker . . ." or "If only I were a lucky person . . . ," they would not acquire increased feelings of control. These characterological counterfactuals, because they merely condemn the self rather than provide insight into specific actions by which the outcome might be changed, should not enhance control (Janoff–Bulman, 1979). The influence of these, and perhaps other types of counterfactuals on perceived control, remains to be addressed in future research.

Counterfactual Direction. A unique characteristic of counterfactual thinking, independent of attribution theory, is that, when an outcome is undone, the counterfactual outcome may be either better or worse than the original outcome. A student can imagine either that studying harder would have brought about a higher grade *or* that studying even less would have brought about a lower grade. Both are examples of counterfactual undoing, and both may therefore potentially influence perceptions

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of causality and control. However, the functional perspective on counterfactual thinking has determined that clear asymmetries exist between upward and downward counterfactuals. From this perspective, downward counterfactuals are affectively functional and upward counterfactuals are functional for future performance (Markman et al., 1993; Roese & Olson, chapter 6). For example, Roese (1994) demonstrated that upward, not downward, counterfactuals are associated with both intentions to improve and actual improvements in performance.

In all three of their studies McMullen and Markman (1994) found that perceived control was enhanced by upward, but not downward, counterfactuals, findings consistent with this functional perspective. We find this lack of support for the role of downward counterfactuals in perceived control particularly interesting because it suggests that simple undoing is not sufficient to enhance control. Thus, personal control is more than the realization that events are contingent on one's actions; it is a belief that one could have or can bring about *better* outcomes. Perceived control may be more about potential efficacy than about personal causality: Anyone can make things worse, but it is the ability to bring about better outcomes that is truly indicative of personal control.

If downward counterfactuals have any preparative functionality, it would be to provide the individual insight into how to avoid potential pitfalls in the future. Perhaps people are generally concerned with those conditions that are sufficient to produce desirable outcomes, and upward counterfactuals best provide this information. We suspect that if people are more concerned with avoiding negative outcomes, in which case necessary conditions become important in order to know what to avoid in the future, then downward counterfactuals may play a more important role in future preparation.

Although we have argued that counterfactual direction is particularly important for understanding the acquisition of personal control in self-relevant counterfactual thinking, direction may also be a factor in causal judgments about others. Many of the studies reported in the literature on counterfactual judgments of blame incorporated negative events that were undone and that were therefore, in effect, upward counterfactuals (e.g., Kahneman & Tversky, 1982; Macrae, 1992; Miller & McFarland, 1986; Wells & Gavanski, 1989; Wells et al., 1987). Perhaps downward counterfactuals are not as influential in determining perceptions of cause, just as the studies discussed in this chapter indicate a lack of evidence for the role of downward counterfactuals in perceived personal control. This hypothesis would add counterfactual direction to several other judgmental asymmetries in causal attribution, such as additive versus subtractive frames (Dunning & Parpal, 1989) and facilitators versus inhibitors (Hansen & Hall, 1985).

Foreseeability. Another distinctive characteristic of counterfactual thinking is that by definition it occurs after the fact. The arguments to attack or to defend Defense Secretary Aspin's decision not to send additional armor to Somalia were about the actual versus the counterfactual consequences of his decision. Therefore these counterfactuals were independent of the intentionality or foreseeability of the actions that were taken at the time. Indeed, a commonly used defense by politicians, including Aspin with regard to Somalia and Attorney General Reno with regard to the deaths in Waco, is "I made the best decision possible with the information I had at the time." This is, in effect, an admission of causality but also a denial of foreseeability and, hence, a denial of personal responsibility or blame.

Several theorists have convincingly argued for making conceptual distinctions among different levels of causality based on foreseeability and intentionality (Heider, 1958; Shaver & Drown, 1986). In their third study, McMullen and Markman (1994) included two conditions based on the different types of control participants had over their choice of cards. In the first group, participants chose from two face-down cards and therefore could not possibly have foreseen the outcome due to the blind nature of their choice. A second group of participants chose from two cards with different back patterns and colors that were actually randomly determined by the computer. Participants in this second group were told, however, that the backs of the cards could help them choose the correct card. Before playing the games, participants in this condition participated in a "learning session" in which they chose cards based on the back patterns and were given false feedback about their success at choosing the cards. Thus they believed it was possible to determine the correct card. Consequently, participants in this condition had some degree of foreseeability compared to participants who simply chose their cards blindly.[5]

The results of McMullen and Markman's (1994) study showed no differences between participants who made foreseeable choices and those who made nonforeseeable choices, in terms of how the counterfactuals influenced perceived control or responsibility. Upward counterfactuals that focused on decisions of the self increased feelings of control and responsibility equally for foreseeable and nonforeseeable decisions. What is perhaps most interesting about these results is that even those partici-

[5]It is also true that the participants who were presented cards with differently patterned backs had more precounterfactual control than those making a blind choice. Indeed, it is difficult to imagine a situation in which increased foreseeability is not coupled with enhanced perceived control. Our point is that the nature of that increased control is foreseeability and that those participants who clearly had no foreseeability in their choices did experience enhanced control as a result of the counterfactuals with which they were presented.

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pants who clearly had no foreseeability in their decisions, and therefore could easily have said "I couldn't have known any better," were still influenced by the counterfactual alternatives, just as much as participants who believed they could have known better. These results attest to the powerful, almost irrational impact of counterfactual thinking. Even lottery players who in no way could have known what numbers to pick feel a sense of self-blame when they find out how close their numbers were to the winning ones.

Scenario Plausibility. This final issue, the plausibility of the counterfactual scenarios, arose as a purely methodological problem. In their second study, McMullen and Markman (1994) instructed participants to imagine specific types of counterfactual alternatives to their recalled events according to certain directions. McMullen and Markman were concerned that some participants would simply arrive at implausible counterfactual scenarios, such as "Sure, that test was so hard I suppose I could have studied eighteen hours a day for six weeks and received a better grade." Participants were therefore asked to rate the likelihood of their having engaged in the counterfactual behavior. Results indicated that the more plausible the scenarios, as measured by these ratings, the greater their impact on changes in perceived control. McMullen and Markman noted, however, that counterfactuals did have a significant impact on perceived control even with plausibility partialled out. That is, even implausible counterfactuals may have some impact on perceived control. These results suggest that plausibility should be treated not as a necessary condition, but rather as a moderator of the counterfactual–perceived control relationship.

Conclusion. We have suggested that one of the primary consequences of a person's engaging in self-relevant counterfactual thinking is a change in perceived control. Perceived control is enhanced when an outcome can be imagined better as a result of some action or decision by the self, and control is reduced when an outcome would not have changed regardless of the self's actions. These changes in perceived control are stronger to the extent that the imagined scenarios are deemed plausible but occur regardless of whether the outcomes could have been foreseen.

The Affective-Contrast Effect: A Closer Look

The affective consequences of counterfactual thinking are perhaps the most compelling phenomena in this area. For example, in a recent "Ask Marilyn" column, in which people write to the "world's smartest person" with their questions, Mary from Virginia asked, "Last year, I missed

winning the $27 million Virginia lottery by only one number. Can you say something to make me feel better?" Marilyn responded, "Mary, if I knew how to make people feel better about not having millions of dollars, we wouldn't need lotteries anymore" (Vos Savant, 1994).[6] Would psychologists studying counterfactual thinking answer Mary's question any differently? Several conceptions of the affective consequences of counterfactual thinking focus on how outcomes are undone, such that the ease of imagining how an event might not have occurred determines the affective response (e.g., Gleicher et al., 1990; Kahneman & Tversky, 1982). Others have more recently pointed to the importance of conceptualizing counterfactuals in terms of direction (Markman et al., 1993; 1995). For most events, one can imagine both better and worse possible alternatives, and the affective response is thus determined by means of a contrast effect to the imagined alternative.

All of the experiments discussed here have provided evidence for this affective-contrast effect: Participants reported feeling better or more satisfied when they made downward counterfactuals compared to participants who made upward counterfactuals and who felt worse and less satisfied. There are, however, some questions regarding the symmetry of affective responses to upward and downward counterfactuals. Roese (1994) correctly pointed out that the lack of a no-counterfactual control condition in several studies leaves doubt as to whether both directions have affective consequences or one of the two directions alone is responsible for the effect. In one of his studies that included a no-counterfactual condition, downward counterfactuals made participants feel better, but upward counterfactuals did not make participants feel worse. However, as Roese pointed out, whereas Markman et al. (1993) manipulated perceived outcome valence, Roese's study involved exclusively negative outcomes.

In fact, McMullen and Markman (1994) found the opposite pattern in their third study. Compared to those in a no-counterfactual condition, upward counterfactuals were significantly more powerful in promoting negative affect than downward counterfactuals were in promoting positive affect. However, clearly positive outcomes were used in that study: Participants were playing games and winning money. This finding is consistent with Roese's (1994) suggestion that a "floor" effect prevents upward counterfactuals from exerting their full effect on negative events and that a "ceiling" effect prevents downward counterfactuals from exerting their full effect on positive events. A single study including both a no-counterfactual condition and a manipulation of outcome valence would be very helpful in clarifying this issue.

Apart from the symmetry of the contrast effect, we have also begun to question its generality. On first inspection, it appears that Mary from

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Virginia (Vos Savant, 1994) has a clearly upward counterfactual and is inevitably faced with negative affect. Current functionalist theories of counterfactual thinking, including our own, have posited a preparative function for upward counterfactuals and an affective function for downward counterfactuals (Markman et al., 1993; Roese, 1994; for a review, see Roese & Olson, chapter 1). Indeed, we proposed a compromise between affect and future preparation such that the concern for future improvement that prompts upward counterfactuals is bound to lead to negative affect.

The affective picture may not be quite so simple, however. Findings from research in social comparison, for example, have indicated that comparison direction is not a necessary determinant of affective reactions (Buunk, Collins, S. Taylor, VanYperen, & Dakof, 1990). For example, upward comparisons indicate not only that others are better off than oneself but also that it is possible to be better off. This dual nature of comparison should be particularly true for counterfactual thinking, because it involves hypothetical scenarios involving oneself rather than comparisons to another person. The results of two lines of research based on this reasoning have suggested a positive affective role for upward counterfactuals in certain circumstances. First, can the belief that it is within her control to win the lottery mitigate some of Mary's negative affect (Vos Savant, 1994)? Second, can Mary relieve some of the pain of almost winning by avoiding comparison to the counterfactual and instead basking in the fantasy of having millions of dollars? These approaches are referred to as the *control-mediated affect* and the *comparing versus basking* approaches, respectively.

Control-Mediated Affect. In their research on how counterfactual thinking influences perceived control, McMullen and Markman (1994) had a secondary purpose: to determine the relationship between the perceived control acquired through counterfactual thinking and subsequent affect. Although both affect and perceived control are directly influenced by counterfactual thinking, they hypothesized a positive relationship between affect and control independent of the usual affective contrast effect. That is, if perceived control brings about positive affect (Dunn & Wilson, 1990; Langer, 1975), *to the extent* that people acquire feelings of personal control over an event through counterfactual thinking, they should feel somewhat better. Along the same lines, Roese (1994) suggested that an upward counterfactual "may be upsetting because it makes salient the deprived present state, yet it may also be uplifting if it gives hope for future betterment" (p. 806). When counterfactuals do lead to feelings of control, it would be useful to distinguish conceptually (and statistically) that portion of the affective response due to the contrast

effect and that portion associated with perceived control. McMullen and Markman therefore used the term control-mediated affect to refer to an indirect effect of the counterfactual on affect, mediated by the perceived control acquired through counterfactual thinking.[7]

In all three of their studies on the acquisition of control through counterfactual thinking, McMullen and Markman (1994) found positive correlations between perceived control and affective evaluations of the event, with the counterfactuals' contrast effect statistically held constant. In other words, participants reported feeling better about what happened to the extent they reported greater perceived control over the event. Thus, if Mary from Virginia (Vos Savant, 1994) concludes that it was possible for her to win millions of dollars by picking the winning numbers, this perceived control over the lottery will bring about a degree of positive affect that mitigates the negative affective impact of the contrast effect. It is frustrating, yet exciting to almost win millions of dollars because that means it was *possible* to win. Someone whose numbers do not even come close to the winning numbers will not obtain that thrill of "I could have won," because they simply proved once again that winning the lottery is virtually impossible. In that case, although the contrast effect will be significantly reduced, a decreased sense of perceived control may actually bring about negative affect.

We therefore have evidence that self-relevant counterfactuals influence affect through two mediational mechanisms, the contrast effect and perceived control. What is particularly interesting about this conceptualization is that for upward counterfactuals, these mediators operate in opposite directions. The contrast effect brings about negative affect, whereas the acquired perceived control brings about positive affect. We should note that in none of the three studies did McMullen and Markman (1994) find an overall affective benefit of making upward counterfactuals, even when control was maximally enhanced. This result is likely due to the fact that the counterfactual's influence on affect via control is an *indirect* effect (i.e., mediated by control), whereas the counterfactual's influence on affect via the contrast effect is a *direct* effect. Participants making upward counterfactuals felt, at best, the same as those participants making downward counterfactuals, not better. However, participants making upward counterfactuals reported feeling significantly worse when they were not at the same time acquiring a sense of perceived control. We therefore

[7]McMullen and Markman (1994) prefer a mediational approach because it is consistent with their research showing that counterfactual thinking causally influences perceived control and with other research indicating that perceived control leads to positive affect (Dunn & Wilson, 1990; Langer, 1975). However, a moderator approach in which perceived control influences the relationship between counterfactuals and affect is also consistent with the data (see Baron & Kenny, 1986).

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believe it is crucial to take perceived control into consideration if psychologists are to fully understand the affective implications of counterfactual thinking, particularly the functional or dysfunctional implications. For example, Davis and colleagues (Davis & Lehman, chapter 13; Davis, Lehman, Wortman, Silver, & Thompson, 1995) have found a correlation between undoing and distress among people who suffered a death in the family due to a car accident or Sudden Infant Death Syndrome. To the extent their respondents thought "If only I had done something different . . . ," they coped less effectively with the trauma as much as 4–7 years later. Is this, as Sherman and McConnell (chapter 7) suggest, an indication of the dysfunctionality of engaging in counterfactual thinking? Perhaps, but it is not clear whether participants' counterfactual ruminations were successful or unsuccessful in promoting feelings of control over the event. Findings from McMullen and Markman's (1994) research indicate that to the extent people increase their perceived control over what happened, they experience less negative affect. If, however, they make upward counterfactuals that do not enhance feelings of control, they experience the full brunt of the negative affect associated with considering how things could have been better.

In an interesting and particularly relevant set of studies, Boninger et al. (1994) argued that a focus on the future plays a key role in determining affective reactions to counterfactuals. Their argument is that the negative affect associated with upward counterfactuals should be mitigated when an individual focuses on the future. We expect that this pattern will be especially true to the extent that one gains control through the counterfactual. For example, if one imagines how the teacher could have awarded higher grades, one is unlikely to feel better by focusing on the future. If, however, one imagines how studying harder would have resulted in a better grade, a focus on the future, coupled with an enhanced sense of control, is particularly likely to minimize the negative affective consequences of the upward counterfactual.

Furthermore, consideration of control can provide a better understanding of the specific emotions experienced in response to counterfactual thinking (cf. Weiner, 1985). Several researchers have noted that in studies on counterfactuals and affect, dependent measures that included counterfactually related emotion terms, such as "disappointment," "relief," and "regret," met with relatively greater success compared to the mixed results obtained from measures with more general affect terms, such as "positive–negative," and "good–bad" (Boninger et al., 1994; Roese, 1994). In fact, emotion is often described as a discrepancy experience (Abelson, 1983; Higgins, 1987). This notion of *counterfactual emotions*, or emotions that are driven by considerations of what might have been, is particularly relevant to the research on counterfactuals, affect, and control.

The view that counterfactuals consist of both affect-provoking and causality-attributing components implies that a variety of combinations of affect and control are possible. For example, there are upward counterfactuals that result in enhanced feelings of control, and upward counterfactuals that do not enhance feelings of control. These different combinations of affect and control should result in distinct emotional reactions, beyond the simple, one-dimensional approach to affective reactions utilized in the studies on control previously discussed.

It would therefore be useful to extend some of the current theorizing to specific counterfactual emotional experiences. Niedenthal et al. (1994) have begun to do this by showing how guilt is associated with mutations of one's behavior ("If only I hadn't . . .") and how shame is associated with mutations of one's self ("If only I weren't . . ."). Tangney's (1990) findings are consistent with our contention that upward counterfactuals should lead to less negative affect when they enhance control. Tangney suggested that shame is a much more powerfully negative emotion than guilt, because guilt provides a sense that one can rectify the situation through behavior and shame does not. Although shame and guilt represent upward counterfactuals, downward counterfactuals can be analyzed in the same manner. Downward counterfactuals that focus on specific behaviors (e.g., "At least I studied hard enough") should lead to feelings of pride in one's behavior, or what Tangney (1990) termed beta pride. Downward counterfactuals that focus on qualities of the self (e.g., "At least I'm smart enough") should lead to alpha pride, or pride in the self.

In this fashion, specific emotional reactions could be predicted through consideration of counterfactual direction, focus (e.g., self vs. other), and control. For example, upward counterfactuals that focus on another's controlled actions (e.g., "If only the teacher graded easier") would provoke anger, whereas upward counterfactuals that focus on uncontrolled external factors would lead to sadness, but not anger (Weiner, 1985). Similarly, downward counterfactuals that focus on external, controllable factors would lead to feelings of gratitude (e.g., "At least the teacher gave me a good grade"), but when the external factor is not perceived to be under volitional control, a downward counterfactual would lead to feelings of luck or good fortune (e.g., "At least the grading computer accidentally gave me a better grade").

In addition, counterfactual scenarios in which the outcome is not undone should have an impact on emotional responses, because these scenarios decrease feelings of personal control. Gleicher et al. (1990) contended that affective responses would be exaggerated when counterfactual alternatives are judged probable but "blunted if alternatives are judged unlikely, so that the outcome appears inevitable" (p. 293). This pattern is certainly the case for *general* affective responses, but we would

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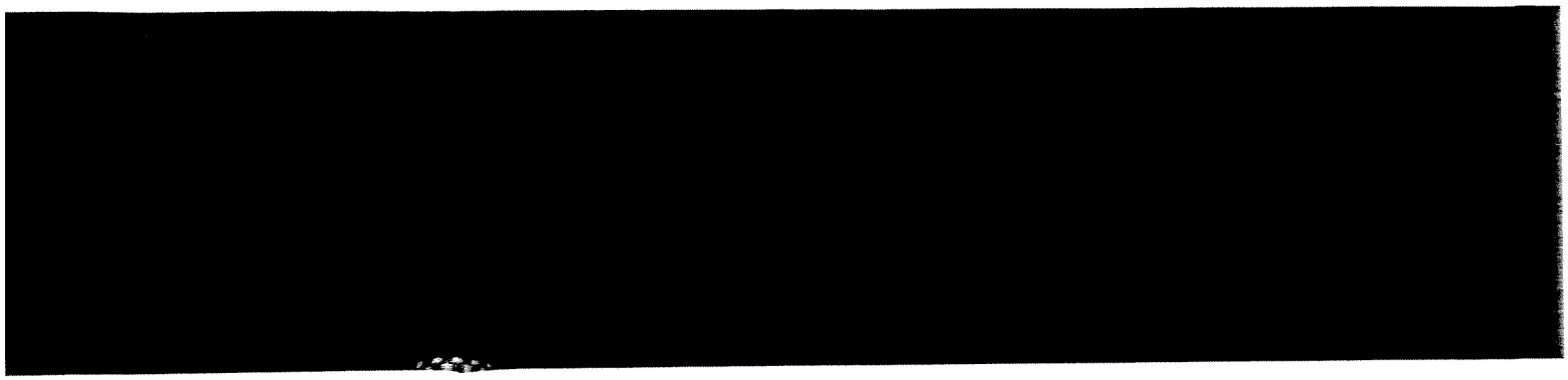

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expect important *specific* emotional experiences to arise. For example, if one is unable to simulate alternative courses that the self might have taken to undo a negative outcome, a sense of helplessness might ensue. If one is unable to simulate how the situation might have been different to undo a negative outcome, frustration may result. In sum, in order to more fully understand the affective consequences of counterfactuals, researchers must consider the combination of affect and control that gives rise to a specific emotional reaction.

Comparing Versus Basking. Our second challenge to the generality of the affective-contrast effect derives from the observation that not all counterfactual thinking must necessarily involve direct comparisons between reality and the imagined alternatives to reality that are considered. Presumably, people may imagine, fantasize, and daydream about better possible worlds simply because it makes them feel good to do so. For example, people who are instructed to relieve themselves of a negative mood frequently visualize sensual situations or happy social events (Means, Wilson, & Dlugokinski, 1987). Several mood-induction techniques incorporate what might be called a mental simulation procedure, by which respondents place themselves in imagined positive or negative affective states either by reading provided statements (e.g., Murray, H. Sujan, Hirt, & M. Sujan, 1990; Velten, 1968) or by self-directed imagery involving the recall of happy or sad events in the person's past (e.g., Bower, 1981; Salovey & Singer, 1988). This technique contrasts with the counterfactual research findings, which suggest that in order to feel better people should imagine *worse* alternatives to reality.

One resolution to this apparent inconsistency derives from the work of Tesser and colleagues in social comparison (e.g., Tesser, Millar, & Moore, 1988). They suggested that people may treat social encounters either by comparing themselves to others (as Wills, 1981, suggested) or by basking in the reflected glory ("birging") of others (as Cialdini et al., 1976, suggested). Whether comparing or birging occurs depends on the importance of the relevant dimension to one's self-concept. For example, if intelligence is very important to one's self concept and a close friend is much smarter, the comparison process would likely be invoked and one would feel bad about one's own intelligence. On the other hand, if athleticism is quite unimportant to one's self-concept, a close other who is a great athlete is likely to invoke birging, and one will feel good and attempt to become closer to that person. Thus, the self-evaluation maintenance (SEM) model assumes that social encounters may or may not be comparative in nature, and that the affective consequences will differ accordingly. Comparative processes yield, in effect, an affective-contrast effect, in that affect is displaced away from the valence of the person

encountered: People feel good when comparing themselves to a worse-off other but bad when comparing themselves to a better-off other. Noncomparative, or birging, processes yield what amounts to affective assimilation: People feel good when associating with a better-off other and bad when associating with a worse-off other.

Taylor and her colleagues have also demonstrated that the affective consequences of social comparison are not as simple as the contrast effect. In a review of the social comparison literature, S. Taylor and Lobel (1989) suggested that patients with cancer often make upward comparisons to seek information and to model more successful behaviors but downward comparisons in order to evaluate one's present state. They concluded that patients "may not use their contacts with survivors and good copers for explicit self-evaluation, but rather may use them for some other purpose" (p. 572). Again, what they are suggesting is that explicit comparisons between oneself and others are not being made in those cases. Rather, the self-evaluative mode is suspended in favor of an information-gathering mode.

In a particularly relevant study, Aspinwall and S. Taylor (1993, Study 1) found that overall, mood changes were *consistent* with the direction of comparison (i.e., affective assimilation occurred). Participants listened to a student speak about either a successful or a failed academic situation. When participants were asked to indicate their mood after hearing the narrative, those who heard the positive testimonial reported increases in positive mood, and those who heard the failure testimonial reported increases in negative mood.[8] Because the experimental situation gave these participants no reason to compare their own state to that of the student they were hearing about, they were in effect basking in the success stories, a response which brought about positive affect. Likewise the failure stories brought about negative affect. Indeed, when participants were later instructed to evaluate their current situation (instructions thus invoking the comparison process), the assimilation effect disappeared, and, for participants who had experienced a recent academic setback themselves, the expected contrast effect emerged.

In a similar fashion, we suggest that mental simulation can be either comparative or noncomparative in nature and that the affective consequences will differ accordingly. Consider the individual who, dissatisfied with his or her personal reality, obtains enjoyment from fantasizing about (i.e., basking in) better realities: "If only I lived like they do on *Lifestyles of the Rich and Famous*." These counterfactual simulations of better possi-

[8]The only participants exhibiting the affective contrast effect for this dependent measure were persons with low self-esteem who had been put into negative moods before hearing the failure testimonial.

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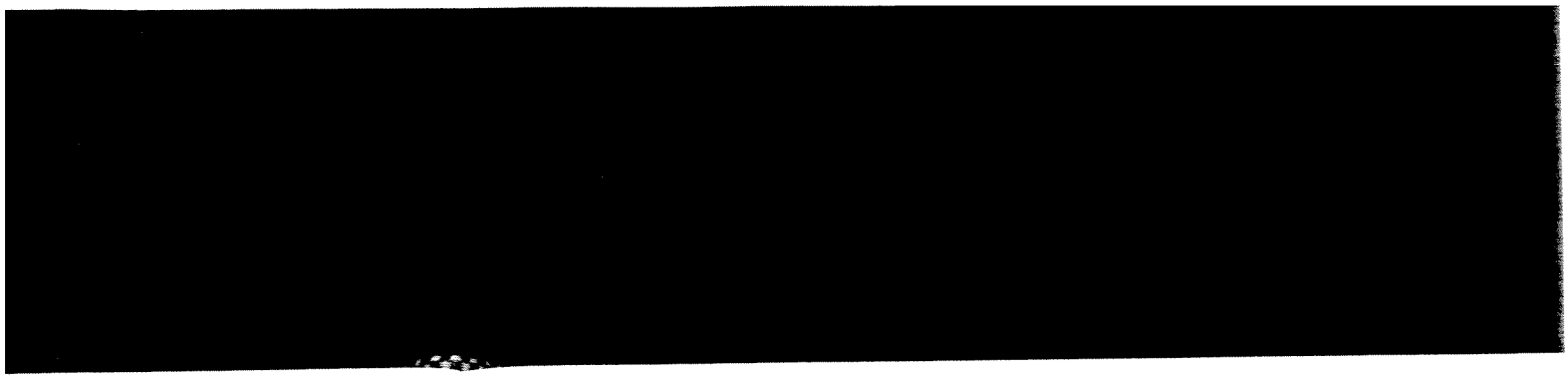

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bilities may bring about at least temporary mood lifts. Thus, independent of a desire for control or future preparation, people may engage in upward simulations for purely affective reasons.

In one preliminary study on this issue, participants recalled recent negative events and then imagined alternatives to those events (McMullen, 1994). Half of the participants were instructed to vividly imagine better alternatives, and half were instructed to vividly imagine worse alternatives. Orthogonally, half of the participants were instructed to think about both what happened and what could have happened, instructions thus invoking comparison, and half were instructed to simulate only what could have happened, instructions thus invoking basking. Note that because all participants were imagining counterfactual alternatives to reality, the difference was only in whether they engaged in comparison to reality or not. Results of dependent measures on mood state immediately after this imagination task indicated that those participants who were basking but not comparing showed mood changes consistent with the valence of the counterfactual: Participants who simulated themselves in positive scenarios felt good; those who simulated themselves in negative scenarios felt bad. This mood-assimilation effect did not occur for participants who were comparing. However, when participants were later instructed to return to and evaluate the actual event, all displayed the usual contrast effect, without regard to whether they were earlier basking or comparing. Thus, although individuals who simulate living like the "rich and famous" may temporarily feel better by escaping their reality, in the end, when they ultimately must return to that reality, they feel even worse.

These results suggest that the affective-contrast effect is neither the only nor necessarily the most likely consequence of counterfactual thinking in all situations. Findings from research on judgments of life satisfaction similarly indicate that the affective-contrast effect is not always to be expected. The affective consequences of recalling actual happy or sad events from one's past depend on whether the recalled event is recent or long past (Strack, Schwarz, & Gschneidinger, 1985). Recent events are included in the category *my life now* and therefore yield an assimilation effect on judgments of life satisfaction, such that recalling a recent, positive event brings about positive affect. Long past events, however, are excluded from the category *my life now*, such that recalling a long past positive event is contrasted with one's current state and therefore brings about negative affect (see also Schwarz & Bless, 1992).

Our focus, however, is on *counterfactual* simulations, which cannot be included in one's current life in the same manner as recollections because they are by definition untrue. One may feel good from reminiscing about the "good old days" if indeed they did occur, but counterfactual simulations are imagined alternatives to reality and are typically assumed to

be used as standards against which reality is judged. We are suggesting that in order for mental simulation to yield affective assimilation, one must suspend the type of comparative thinking in which the simulation is used as a standard of evaluation and, rather, bask in the affective tone of the simulation as one might with a fantasy. When one disengages from the simulation or uses the simulation to evaluate reality, the counterfactual information then acts as a standard against which reality is judged, and the contrast effect emerges.

Conclusion. We have argued for two specific refinements to the counterfactual affective-contrast effect. First, to the extent that people gain control from making counterfactuals, the usual negative affect associated with upward counterfactuals is mitigated. In addition, beyond a simple contrast effect, specific emotional reactions can be predicted through consideration of both the control-oriented and the affective consequences of counterfactual thinking. This dual nature of counterfactual thinking, via affective and attributional mechanisms, should be appreciated particularly when the functionality or dysfunctionality of counterfactual thinking is being considered. Second, affective reactions to counterfactuals are determined by the extent to which one is comparing alternative scenarios to one's actual state. Comparing leads to the affective-contrast effect, but basking in a simulation leads to assimilation of mood to the valence of the simulation.

SUMMARY

We have included a diagram (see Figure 5.3) summarizing the major issues addressed in the research by Markman and colleagues (Markman et al., 1993, 1995; McMullen, 1994; McMullen & Markman, 1994). We by no means suggest this as a comprehensive model of counterfactual thinking but rather as a summary of the findings from this research to date. First, the direction (upward vs. downward) and focus (i.e., what aspect of a situation is mutated) of the counterfactual that is generated is determined by factors such as whether or not one will face a similar situation in the future, what type of control one has in the situation, and the valence of the outcome. The counterfactual that is generated will then influence subsequent affective reactions to the situation, depending on the direction of the counterfactual, the extent to which the counterfactual is comparative in nature, and the degree of control that is acquired or present. Perceived control is determined by direction, whether or not the outcome is successfully undone by the counterfactual, and whether the focus is on the self or on external factors.

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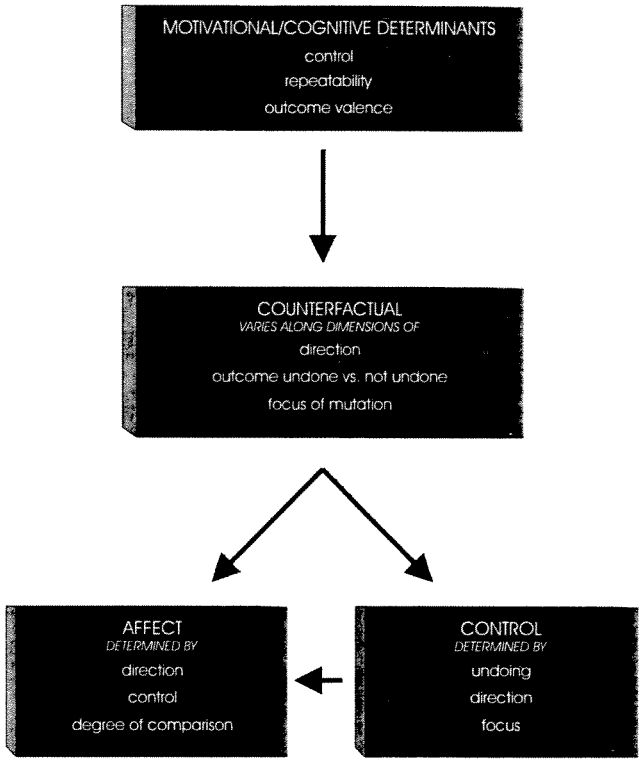

FIG. 5.3. Antecedents and consequences of counterfactual thinking.

With our review of the research, we have attempted to illuminate the antecedents and consequences of counterfactual thinking. One of the prevailing themes of this research has been the conceptualization of counterfactuals in terms of their direction: People may imagine how an event could have been better *or* could have been worse. We believe this represents an advance over most previous research that has focused solely on whether or not an outcome is undone by a counterfactual. We are hopeful that this conceptualization will foster further research that both establishes the conditions under which people imagine better or worse alternatives and provides an understanding of the resulting psychological and behavioral ramifications. A second prevailing theme in the research has been perceived control. We believe that consideration of perceived control as both a determinant and a consequence of counterfactual thinking will help to clarify such issues as the relative functionality or dysfunctionality of imagining alternatives to reality. A third theme has been an appreciation of the complexity of affective responses to counterfactual thinking. Although we believe the affective-contrast effect is a fundamen-

tal counterfactual phenomenon, we have pointed to several extensions and refinements to this effect. In sum, we hope that the research reviewed here illustrates the richness of this fascinating and rapidly growing area.

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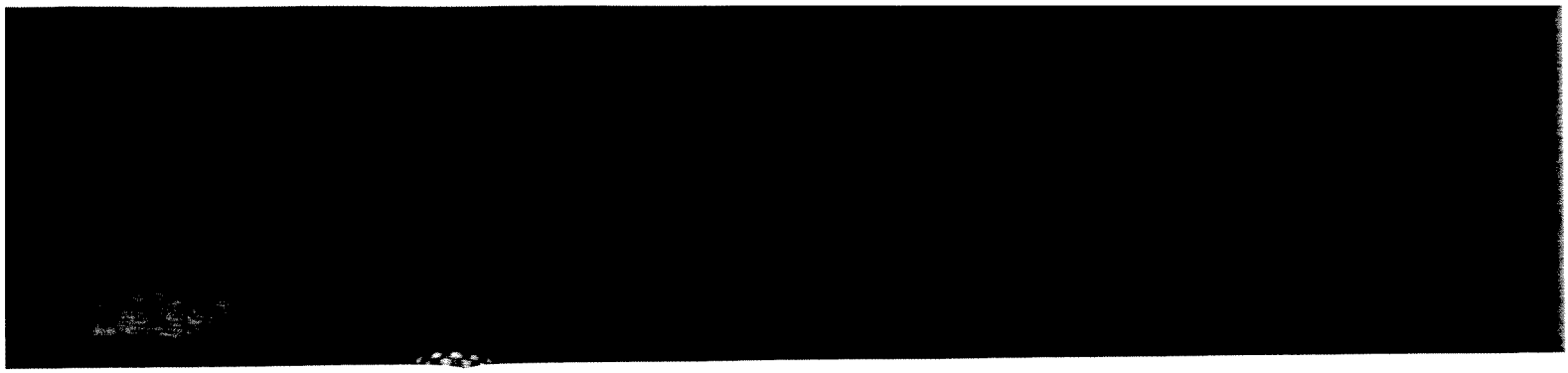

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