

# Thinking About Values in Prospect and Retrospect: Maximizing Experienced Utility

JOEL HUBER

*Fuqua School of Business, Duke University, Durham, NC 27708-0120*

JOHN LYNCH

*Fuqua School of Business, Duke University, Durham, NC 27708-0120*

KIM CORFMAN

*Stern School of Business, New York University, New York City, NY 10012-1126*

JACK FELDMAN

*Department of Psychology, Georgia Tech, Atlanta, GA 30332-0170*

MORRIS B. HOLBROOK

*Graduate School of Business, Columbia University, New York City, NY 10012-1126*

DONALD LEHMANN

*Graduate School of Business, Columbia University, New York City, NY 10012-1126*

BERTRAND MUNIER

*G.R.I.D., Ecole Normale, Supérieure/Cachan, Department d'Economie et Gestion, 61 Avenue President Wilson, 94235 Cachan Cedex, France*

DAVID SCHKADE

*Department of Management, University of Texas, Austin, TX 78712*

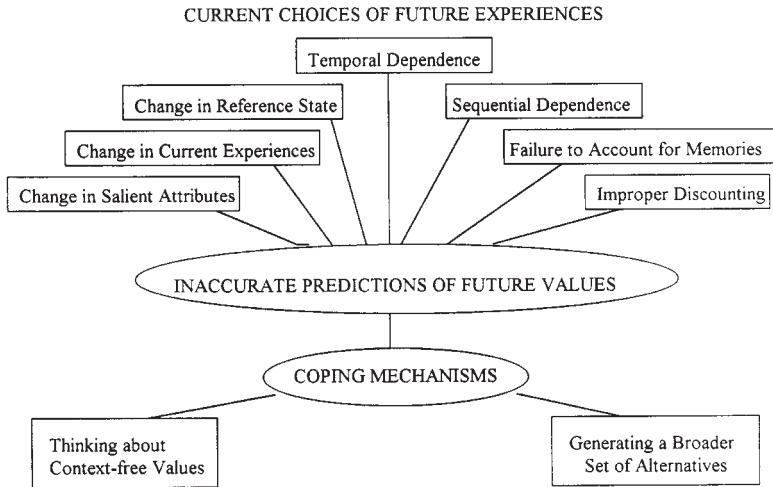
ITAMAR SIMONSON<sup>1</sup>

*Graduate School of Business, Stanford University, Stanford, CA 94305-5015*

## ***Abstract***

Decision-makers often do not or cannot predict at the time of choice how their tastes may change by the time the outcomes are experienced. This paper explores the implications of making decisions by maximizing experienced utility *ex post* rather than *ex ante*. Focusing on being satisfied with choice in retrospect results in quite different kinds of problems than a prospective orientation that projects one's current preferences into the future. We examine a number of ways that people can easily mistake their reactions to outcomes in the future, and propose a series of hypotheses related to how people will be dissatisfied with their choices. Finally, we relate these barriers to good decisions to prescriptive processes that assist people in making decisions with which they will be happy in the future.

**Key words:** prescriptive decision processes, experienced utility, rational choice



Nearly twenty years ago, March (1978) argued that rational choice involves two guesses: a guess about the probability of uncertain future consequences and a guess about uncertain future preferences for those consequences. We focus on the second of these guesses, pursuing the normative implications of recent descriptive research. We examine how accurately people anticipate the utility they will experience from outcomes in the future, concluding that people generally make poor predictions about their *ex post* tradeoffs, particularly as the time lag between choice and outcomes increases. If prediction of *ex post* tastes is poor, decisions that seem “rational” at the time of the decision may, in retrospect, seem wrong-headed or even silly. This focus on maximizing experienced utility (Kahneman, 1994) has both a descriptive and a prescriptive component. We examine ways in which predictions of one’s own preferences are often wrong, and then consider decision making strategies that may lead to greater satisfaction with choices.

Nothing in this orientation is inconsistent with a decision theoretic framework in which a decision maker takes future preferences as exogenous and maximizes the expected value of those predicted preferences in the future (cf. Bell 1982 and the paper on dynamic decision making by Meyer et al. in this volume). Our focus is on the particular difficulty in predicting and appropriately weighting one’s dynamic preferences, as opposed to future states of nature (see Exhibit). First, we consider how tradeoffs might change from the time of choice to the time of experience, then from the time of experience to later consumption of memories of that experience. Then, we examine strategies by which one can make better decisions—in the sense of aligning *ex ante* and *ex post* tradeoffs—and the types of thinking that help and hurt that process. Finally, we suggest research questions that arise from this shift in orientation.

## I. Barriers to satisfaction with past choices

There are a series of decision characteristics that mediate the discrepancies between *ex ante* and *ex post* weights. Some of these characteristics are permanent or semi-permanent—e.g., those associated with biological aging, changes in experience, and changes in our environments. Others are more transitory, such as mood or prior consumption. If changes in future contexts are themselves predictable, a rational chooser should try to anticipate them *ex ante* to make choices that maximize *ex post* happiness. To the extent that the decision maker cannot or will not accurately predict future values, we propose a rational chooser should discount the more distant outcomes. After reviewing a number of factors that produce differences between *ex post* vs. *ex ante* values, we return to the issue of discounting future outcomes as a reasonable response to our inability to predict them.

### 1. Changes in the salient alternatives

It is well known that the information about competitive alternatives affects choice. For example, an alternative is more likely to be chosen if it dominates competitors in the set (Huber, Payne and Puto 1982), or if it is positioned as a compromise (Simonson 1989). Clearly, this dependence creates few *ex ante* and *ex post* deviations if the alternatives that are salient at the original choice remain so at subsequent experience. Typically, however, salient alternatives at the time of choice become much less so later. If so, we would predict that any effect they had on the evaluation of the chosen alternative would diminish or vanish, leading to the prescriptive implication that one would prefer evaluation and decision systems that are relatively independent of local context.

### 2. Changes in concurrent experiences

The utility of an outcome can depend on experiences that are unconnected with the original decision. Generally, the more negative those experiences and the more extreme in (positive or negative) valence, the less the impact of decision consequences on global happiness (e.g., Fiske 1980; Lynch 1979; Shanteau 1974). For example, consider a couple deliberating over the choice of balcony versus orchestra seats for a theater event. When the outcomes of that choice are later experienced, their marginal effect on happiness will depend on whether the evening happens to coincide with highly valenced life events relating to jobs, housing, and family situation, none of which commanded attention at the time of the original choice.

This shift in value is largely *attentional*, where the concurrent experiences overwhelm the differences between the options. However, if attention is drawn to the difference with a question such as “Are you glad you paid the extra money so that you could be close enough to really see the actors clearly?” the response is likely to be positive. Still, in the face of other strong experiences, the appreciation of the quality of the seats is unlikely to emerge without prompting. Given the source of the distortion is attentional, it is very hard

for someone who is currently thinking about an attribute to anticipate the impact on happiness of not thinking about it later.

### 3. *Changes in reference states*

A quite different cause of deviations between the value of expected vs. actual experiences is the *expectational* effect due to a reference state produced by related outcomes. We define the reference state as an expectation that defines the level against which outcomes are evaluated. A critical aspect of this reference state is that a loss from it is more heavily weighted than a gain (Kahneman and Tversky 1979). This reference state is an adaptive function of experiences with the same outcome as well as experiences with related outcomes.

Predicting one's own adaptation to new reference states can be difficult. Consider the purchase of a cappuccino machine which initially gives great pleasure, but over time loses its distinction as one becomes adapted to its taste and elevated caffeine levels. The same adaptation occurs for negative aspects (such as cleaning the machine) which may become easier and less aversive with practice. Note, however, how difficult it is to think about the future attenuation of pleasure or pain at the time of the purchase experiences (Brickman, Coates, and Janoff-Bulman 1978). Lowenstein and Schkade (forthcoming) document a number of cases in which respondents mispredict their own rate of adaptation.

We hypothesize that adaptation (and its underprediction) will be greatest when applied to a string of outcomes with a steady mean level—e.g., choosing a house with a higher or lower mortgage payment, or the feature-laden vs. purely functional dishwasher. To the extent that the outcome is constant over time, adaptation to those outcomes will be strongest. However, suppose that a decision leads to a change in the mean absolute level of some stream of outcomes, but the initial reference outcomes remain. In that condition one should expect far less adaptation. For instance, consider a new father who has taken a protracted unpaid paternity leave and is trying to decide whether to quit his job permanently to stay home with the child. If his close friends and family still have comfortable incomes and associated lifestyles, they remain as salient alternative reference states. The more salient these alternative reference states, the more his adaption to staying home can be expected to be slower and more difficult.

As with other attentional effects, adaptation effects are difficult to merge into one's decision function because, by definition, the adaptation has not occurred. It requires both substantial self-knowledge and discipline to think about feelings that are very different from what one is currently thinking. Scitovsky (1976) argues that people systematically fail at this effort, and that they overinvest in durables, such as washing machines, over nondurables, such as flowers, implicitly believing that the initial benefits from the durable will not fade. This intriguing hypothesis merits more research.

#### *4. Changes due to temporal dependencies in outcome evaluations*

Similar issues arise with respect to temporal dependencies in the evaluation of outcomes. To the extent that choices reflect variety seeking or satiation, predicted satisfaction with a later outcomes may be quite different than at the time of choice (Menon and Kahn 1995). Consider, as examples, ordering too much food when hungry, or purchasing a CD just after a concert in the belief it will be as exciting to hear again.

Kahn, Ratner, and Kahneman (in press) make a distinction between variety seeking that is based on “local maximization” vs. “global maximization” (cf. Herrnstein 1990). In “local maximization,” one chooses the alternative at time  $t$  that one expects will yield the highest utility at time  $t$ . This utility can be history dependent, as when the pleasure derived from consuming caviar or hamburger depends on how recently it has been consumed. In “global maximization”, one considers downstream effects of the choice at time  $t$  for enjoyment at  $t + 1, \dots, t + n$ . Assume that the “baseline” utility from caviar is higher than that for hamburger, but caviar satiates more rapidly (or, alternatively that caviar gains more from lack of recent consumption). If so, a “locally maximizing” consumer might alternate between hamburger and caviar on successive choices. However, a “globally maximizing” consumer might experience more *total* utility by choosing hamburger more often, gaining value from an increasing ability to savor the caviar (Loewenstein 1987).

Researchers have shown that consumers link time-dependent decisions in ways that are consistent with simple dependencies. Linville and Fischer (1991) and Johnson and Thaler (1990) demonstrate that people prefer spacing of experiences that avoids either too much positive or negative stimulation in a given time period. Thus, a person might deliberately avoid going to a long anticipated movie on a day when his child was expected to win a major prize, but instead schedule it for a time, say, after an IRS audit, when positive stimulation would be needed.

In all, there is evidence that people can predict sequential dependencies in their own preferences, at least for hypothetical events. That prediction is likely to be most accurate where decisions are repeated, but less so for novel experiences. Research is needed to establish the contexts in which these judgments are most accurate and when they affect actual choices.

#### *5. Changes in sequence definition*

Looking both forward and back, people have strong preferences for certain sequences of outcomes, such as those with steady increases (Loewenstein and Prelec 1993). In related research, Kahneman, Fredrickson, Schreiber, and Redelmeier (1993) show that recalled evaluations of pain depend critically on the peak pain and the end state in a time sequence (c.f. Kahneman 1994). Their model suggests that the most extreme and most recent experiences with a product or a service have disproportionate influences on consumer’s assessment of its value. Dhar and Simonson (1996) show that consumers prefer having one event with two enjoyable experiences (e.g., having a good seat at a baseball game and drinking a premium beer) coupled with a second event (e.g., mediocre seat and beer), as

opposed to having two balanced, but unexciting events. This preference is consistent with a desire for experiences with a strong memorable peak.

However, if the sequence definition changes from the time of choice to its evaluation, then that will represent still another source of slippage from *ex ante* to *ex post* correspondence. Memory factors play an intriguing and perplexing role in this slippage. Consider a patient choosing between two treatments, both of which involve a period of intense pain, while the second adds a subsequent session of less intense pain. Logically, the first treatment should be preferred, but research by Kahneman et al. (1993) shows that most people who experience both sequences prefer to repeat the second one, presumably because the second sequence has a less painful end. Recency effects make end states more important in one's overall memory of a sequence. The "peak" effect and the related phenomenon of duration neglect may have a similar memorial base. People have difficulty recalling the passage of time in which other experiences do not change, but they attend to, and remember changes in those sequences (Carmon and Kahneman 1995).

The impact of peak and end experiences depends critically on perceptual factors controlling how people define a "sequence." For instance, a scalloped string of experiences (... 1,2,3,1,2,3,1,2,3 ...) may seem more attractive if it is perceptually unitized as [(1,2,3), (1,2,3), (1,2,3) ...] than if it is unitized as [...(3,1,2), (3,1,2), (3,1,2)...].<sup>2</sup> If so, it matters which of these frames remain stable over time. There may be principles defining perceptual unitization of outcomes similar to the principles social psychologists have uncovered for how people unitize streams of actions in person perception (Newtston, Rinder, Miller, and LaCross 1978).

From a prescriptive perspective, better correspondence between choices and their retrospective evaluations should occur if the sequence definition at the time of choice is consistent with the definition at the time of the experience. The discussion above implies that such consistency is unlikely, adding still another disjoint between *ex ante* and *ex post* evaluation of choices.

## 6. Factoring in the importance of memories of the experiences

So far, we have focused on the *ex post* evaluation of outcomes from a choice occurring immediately after the outcomes are directly experienced. Clearly, however, people later reminisce; their relived memories of the earlier set of experiences have utility too. In such cases, the evaluation of a remembered set of events depends on the time lag from the series. Thinking back on a past week one might link a car problem, a breakthrough on a research paper, and the birthday of one's son as part of one sequence. Over time, these events may be reframed in groups related to the similar semantic classes—i.e., birthdays together with other birthdays and car problems with other car problems, so that the original sequence can be weakened or lost.

We hypothesize that in looking back, a greater temporal distance from a string of events will induce a broader temporal frame, altering recollected utility by changing the identities of the peak and end events. Moderately extreme events that are "peaks" when viewed in the context of a narrow time frame may not be so when later recalled as part of a longer

sequence. For example, the classroom mini-crisis that made for a bad week may receive little weight when one thinks back about how the semester went.

The weight of end events should also change with greater temporal distance in reminiscence. If this distance induces a broader time frame, events that were heavily weighted “ends” will appear in the middle of a longer subjective sequence and have less effect on remembered happiness. Moreover, even if greater temporal distance does *not* change the definition of a sequence, the memory advantage of the most recent experience may be diminished with the simple passage of time from the last event in the sequence (Greene 1986). In all, the relative weight of the end relative to peak should diminish with the passage of time.

In some contexts memory serves not just to rearrange sequences but to be part of the goal, as for events such as weddings and graduations, where an important stream of experiences involves the consumption of *memories* long after the physical experiences have ended. In this case, a rational chooser should try to maximize both the utility of the consumption experience and the later consumption of the memories of that experience. Then, it becomes important to anticipate both how the experiences and memories will change over time and to predict the occasions on which people will pause to evaluate (Elster and Loewenstein 1992).

The presence of memory factors raises the importance of being able to predict when people will spontaneously recall their past behavior and its consequences. It seems likely that greater time between outcomes and evaluation reduces people’s ability and motivation to recall the series. If so, the number of reminiscences per unit time will decrease with temporal distance, resulting in the prescriptive recommendation that we should give more weight to near- over long-term time periods (but, see also Gilovich and Medvec 1995).

### 7. *Unpredictability and discounting future values*

The inability to predict *ex post* reactions to choice outcomes has implications for discounting future events. Generally, to the extent that there is an unpredictable difference between how one expects to and does value the future, it is appropriate to put less weight on future outcomes. Put differently, discounting should increase with greater error in the *ex ante* prediction of *ex post* weights. Context effects differ in terms of the upper and lower bounds on predictability, and the rate at which predictive ability approaches the lower bound over time. For instance, in most cases, people are unable to predict the context of other outcomes experienced concurrently more than a day or two into the future. Of course, if unpredictability does not increase over time, then the discount rate should not increase with time.

## II. Coping mechanisms: thinking about values and alternatives

The previous discussion has shown several ways in which choices that seem good at the time may appear unwise in retrospect. Differences in the choice context, concurrent

experiences, expectations, the definition of the time frame, and mispredicting one's ability or willingness to adapt can all contribute to poor decisions. In this section we examine two well-known guidelines for better decision making—thinking about values and generating broad sets of alternatives.

Values are determined by reflecting on those aspects of one's life that have brought the most joy and satisfaction. Following the recommendation of Fischhoff, Slovic and Lichtenstein (1980) to "know what you want," one of the more articulate proponents of thinking hard about values is Ralph Keeney (1992). He contrasts "value-based" thinking that focuses on one's underlying tradeoffs with "alternative-based" thinking that focuses on evaluating the merits of a given set of options. Lynch, Buzas, and Berg (1994) argue that in alternative based thinking, decision-makers fall prey to changing the weights they assign different dimensions on a case-by-case basis; they attend only to the salient, extreme dimensions of each option. Value-based thinking can lead to more consistent weighting that is less affected by local reference points.

Further, to the extent that thinking hard about decisions uncovers feelings about the consequences of various actions, such thinking can permit one to enter projected *ex post* values in one's current decision function. Thinking about such *situated* values can help one develop and utilize implicit theories of how one will react by imagining different consumption contexts that may be present at the time of later experiences.<sup>3</sup> Thus, imagining how one would feel after a large appetizer might prevent one from ordering too much food. Noting how one enjoys memories may stimulate the building of a photo album or videos that reinforce a valued event sequence. Knowing that current satisfaction is a function of one's reference level may lead to less willingness to undergo experiences that make one's current situation look bad. Thus, self knowledge, consciously applied, can reduce the gap between how one expects to value the outcome of a choice and how it finally is valued.

One of the advantages claimed for thinking about values is that it helps generate new alternatives, engendering creative and often superior combinations that are less dependent on relatively arbitrary memory factors (Nedugadi 1990). While this problem-solving benefit does not directly invoke greater knowledge of future values, the generation of new alternatives can assist prediction of these future values in two ways. First, as multiple alternatives generate diverse reference levels, they may minimize the dominance of any particular reference level and limit distortions from short-term loss aversion or the status quo bias. Second, considering new alternatives may generate more elaborate thoughts about alternative life styles that make one aware of how values can shift in different contexts, thus reinforcing knowledge of situated values.

### III. When thinking harder may be self-defeating

The unifying theme so far has been that people have difficulty bringing future desires into their current choices. Thinking about values lessens this difficulty with its focus on long-term and future goals, while generating alternatives serves to limit the impact of



arbitrary context effects. This section examines those conditions in which thinking harder may be self-defeating.

The most obvious condition in which thinking is unlikely to be useful is where the time frame is large enough or the volatility sufficient that future tastes are highly unpredictable. In these circumstances, people will make judgments about what they expect to like, but if these judgments have low explanatory power, people are likely to overweight them. Furthermore, thought may act to polarize attributes and increase their accessibility (Tesser 1978). Both lead to more extreme judgments and a greater likelihood of short-term behavior consistent with these newly created attitudes (Feldman and Lynch 1988). While in the near term, this consistency may be advantageous, it may also seem quite short-sighted as the outcomes from those choices are later assessed.

It is easy to find examples where more thought produces worse results. Simonson (1989) shows that context distortions can increase when respondents are required to justify their reasons. Simonson and Nowlis (1966) demonstrate that consumers who provide reasons for their choices tend to select options that “go against the crowd,” especially if they are predisposed to express their autonomy and uniqueness. Wilson and Schooler (1991) show that introspecting about strawberry jam or college course selection result in choices that are less in agreement with experts than when such introspection is lacking.

The key conclusion is that thinking about values is most likely to be self-defeating when the cues or reasons that one retrieves are a *biased sample* of those that would normally be salient in consumption later. Decisions about hedonic goods, for example, may be more subject to the sampling of unrepresentative cues than more utilitarian goods because these reactions may be more automatic, less accessible to articulation. Easily defined but inappropriate criteria are more likely to be used in the decision process, resulting in diminished satisfaction with the outcome.

It is also easy to see how decontextualizing the decision may be self-defeating, simply because *ex post* tradeoffs will not themselves be context free. Thus, one may be better off trying to predict the eventual context than striving for contextual independence. The general argument for decontextualizing derives from its stability and the benefits that accrue to regressing predictions to the mean under uncertainty. However, in situations where future contexts are predictable and their impact known, then one may be better off modeling them.

Thus far, the “deeper thinking” we have examined has focused on a specific type—*ex ante* attempts to clarify one’s “context free” values. There is nothing sacred about this type of thinking as a way to bring *ex ante* and *ex post* utilities into line. Practice making choices and *ex post* feedback about the outcomes of those choices have been shown to inoculate against a variety of context and measurement effects (e.g. Feldman and Lynch 1988; Morwitz, Johnson, and Schmittlein 1993). Anything that hastens this process of learning tradeoffs from feedback should lessen the (differential) effects of context *ex ante* and *ex post*, which should help maximize experienced utility. The recent research of West, Brown, and Hoch (1996) provides one example of how this might be accomplished. By providing “consumption vocabulary” to understand and describe experience, people can learn their tastes more rapidly.

#### IV. Summary and research directions

This paper has examined March's second guess, that one knows one's preferences in the future. We have reviewed a number of ways in which decision makers can be wrong about their future preferences. They can make the wrong guess about the salience of choice alternatives, the impact of concurrent outcomes, the general reference level, the time frame or the sequences over which the outcomes are evaluated, and finally, the affect associated with the timing and frequency of memories of the outcomes. These sources of variability have different implications with respect to how much future events should be discounted in choice processes.

When "rational" or "good" choices are defined in terms of maximization of *ex post* happiness rather than *ex ante* consistency with axioms, a number of new research areas emerge. Do people discount outcomes in the future as a function of their inability to predict their tastes at those times? When a choice leads to a stream of outcomes over time, how is our ability to predict those tastes affected by the temporal separation between choice and experience? How do different context effects already documented in the literature impact our ability to predict future tastes? When is experienced utility dominated by the original experience versus the later consumption of memories of the experience? When we look back to consume those memories, what determines which events emerge and how they are organized into sequences? What factors determine when and how frequently we look back to consume those memories, and how are these factors reflected in discounting of outcomes of choice that occur at different points in time? Most generally, what types of thinking *ex ante* will help maximize *ex post* utility? These issues are quite different from those associated with prospective analyses of rationality. We hope this paper provides an agenda for their exploration.

#### Notes

1. Joel Huber and John Lynch organized the session. The outcome is truly a joint process, where we all gained from the diversity of insight from the participants. The ordering of authorship within each group is alphabetical.
2. Thanks to Craig Fox for suggesting this example and for useful discussions related to the next section of the paper.
3. Thanks to Susan Brodt for this suggestion.

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