Bad Events

The concept of loss aversion is certainly the most significant contribution of psychology to behavioral economics. This is odd, because the idea that people evaluate many outcomes as gains and losses, and that losses loom larger than gains, surprises no one. Amos and I often joked that we were engaged in studying a subject about which our grandmothers knew a great deal. In fact, however, we know more than our grandmothers did and can now embed loss aversion in the context of a broader two-systems model of the mind, and specifically a biological and psychological view in which negativity and escape dominate positivity and approach. We can also trace the consequences of loss aversion in surprisingly diverse observations: only out-of-pocket losses are compensated when goods are lost in transport; attempts at large-scale reforms very often fail; and professional golfers putt more accurately for par than for a birdie. Clever as she was, my grandmother would have been surprised by the specific predictions from a general idea she considered obvious.

Negativity Dominance

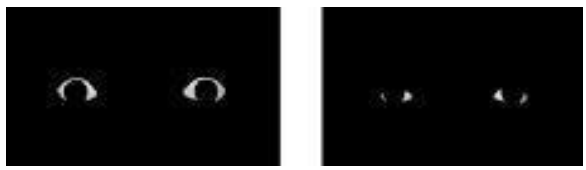

Figure 12

Your heartbeat accelerated when you looked at the left-hand figure. It accelerated even before you could label what is so eerie about that picture. After some time you may have recognized the eyes of a terrified person. The eyes on the right, narrowed by the Crro raised cheeks of a smile, express happiness—and they are not nearly as exciting. The two pictures were presented to people lying in a brain scanner. Each picture was shown for less than $^{2}/_{100}$ of a second and immediately masked by "visual noise," a random display of dark and bright squares. None of the observers ever consciously knew that he had seen pictures of eyes, but one part of their brain evidently knew: the amygdala, which has a primary role as the "threat center" of the brain, although it is also activated in other emotional states. Images of the brain showed an intense response of the amygdala to a threatening picture that the viewer did not recognize. The

information about the threat probably traveled via a superfast neural channel that feeds directly into a part of the brain that processes emotions, bypassing the visual cortex that supports the conscious experience of "seeing." The same circuit also causes schematic angry faces (a potential threat) to be processed faster and more efficiently than schematic happy faces. Some experimenters have reported that an angry face "pops out" of a crowd of happy faces, but a single happy face does not stand out in an angry crowd. The brains of humans and other animals contain a mechanism that is designed to give priority to bad news. By shaving a few hundredths of a second from the time needed to detect a predator, this circuit improves the animal's odds of living long enough to reproduce. The automatic operations of System 1 reflect this evolutionary history. No comparably rapid mechanism for recognizing good news has been detected. Of course, we and our animal cousins are quickly alerted to signs of opportunities to mate or to feed, and advertisers design billboards accordingly. Still, threats are privileged above opportunities, as they should be.

The brain responds quickly even to purely symbolic threats. Emotionally loaded words quickly attract attention, and bad words (*war*, *crime*) attract attention faster than do happy words (*peace*, *love*). There is no real threat, but the mere reminder of a bad event is treated in System 1 as threatening. As we saw earlier with the word *vomit*, the symbolic representation associatively evokes in attenuated form many of the reactions to the real thing, including physiological indices of emotion and even fractional tendencies to avoid or approach, recoil or lean forward. The sensitivity to threats extends to the processing of statements of opinions with which we strongly disagree. For example, depending on your attitude to euthanasia, it would take your brain less than one-quarter of a second to register the "threat" in a sentence that starts with "I think euthanasia is an acceptable/unacceptable…"

The psychologist Paul Rozin, an expert on disgust, observed that a single cockroach will completely wreck the appeal of a bowl of cherries, but a cherry will do nothing at all for a bowl of cockroaches. As he points out, the negative trumps the positive in many ways, and loss aversion is one of many manifestations of a broad negativity dominance. Other scholars, in a paper titled "Bad Is Stronger Than Good," summarized the evidence as follows: "Bad emotions, bad parents, and bad feedback have more impact than good ones, and bad information is processed more thoroughly than good. The self is more motivated to avoid bad self-definitions than to pursue good ones. Bad impressions and bad stereotypes are quicker to form and more resistant to disconfirmation than

good ones." They cite John Gottman, the well-known expert in marital relations, who observed that the long-term success of a relationship depends far more on avoiding the negative than on seeking the positive. Gottman estimated that a stable relationship requires Brro Qres Brrthat good interactions outnumber bad interactions by at least 5 to 1. Other asymmetries in the social domain are even more striking. We all know that a friendship that may take years to develop can be ruined by a single action.

Some distinctions between good and bad are hardwired into our biology. Infants enter the world ready to respond to pain as bad and to sweet (up to a point) as good. In many situations, however, the boundary between good and bad is a reference point that changes over time and depends on the immediate circumstances. Imagine that you are out in the country on a cold night, inadequately dressed for the torrential rain, your clothes soaked. A stinging cold wind completes your misery. As you wander around, you find a large rock that provides some shelter from the fury of the elements. The biologist Michel Cabanac would call the experience of that moment intensely pleasurable because it functions, as pleasure normally does, to indicate the direction of a biologically significant improvement of circumstances. The pleasant relief will not last very long, of course, and you will soon be shivering behind the rock again, driven by your renewed suffering to seek better shelter.

Goals are Reference Points

Loss aversion refers to the relative strength of two motives: we are driven more strongly to avoid losses than to achieve gains. A reference point is sometimes the status quo, but it can also be a goal in the future: not achieving a goal is a loss, exceeding the goal is a gain. As we might expect from negativity dominance, the two motives are not equally powerful. The aversion to the failure of not reaching the goal is much stronger than the desire to exceed it.

People often adopt short-term goals that they strive to achieve but not necessarily to exceed. They are likely to reduce their efforts when they have reached an immediate goal, with results that sometimes violate economic logic. New York cabdrivers, for example, may have a target income for the month or the year, but the goal that controls their effort is typically a daily target of earnings. Of course, the daily goal is much easier to achieve (and exceed) on some days than on others. On rainy days, a New York cab never remains free for long, and the driver quickly achieves his target; not so in pleasant weather, when cabs often waste time cruising

the streets looking for fares. Economic logic implies that cabdrivers should work many hours on rainy days and treat themselves to some leisure on mild days, when they can "buy" leisure at a lower price. The logic of loss aversion suggests the opposite: drivers who have a fixed daily target will work many more hours when the pickings are slim and go home early when rain-drenched customers are begging to be taken somewhere.

The economists Devin Pope and Maurice Schweitzer, at the University of Pennsylvania, reasoned that golf provides a perfect example of a reference point: par. Every hole on the golf course has a number of strokes associated with it; the par number provides the baseline for good—but not outstanding—performance. For a professional golfer, a birdie (one stroke under par) is a gain, and a bogey (one stroke over par) is a loss. The economists compared two situations a player might face when near the hole:

- putt to avoid a bogey
- putt to achieve a birdie

Every stroke counts in golf, and in professional golf every stroke counts a lot. According to prospect theory, however, some strokes count more than others. Failing to make par is a los Brro Q los Brrs, but missing a birdie putt is a foregone gain, not a loss. Pope and Schweitzer reasoned from loss aversion that players would try a little harder when putting for par (to avoid a bogey) than when putting for a birdie. They analyzed more than 2.5 million putts in exquisite detail to test that prediction.

They were right. Whether the putt was easy or hard, at every distance from the hole, the players were more successful when putting for par than for a birdie. The difference in their rate of success when going for par (to avoid a bogey) or for a birdie was 3.6%. This difference is not trivial. Tiger Woods was one of the "participants" in their study. If in his best years Tiger Woods had managed to putt as well for birdies as he did for par, his average tournament score would have improved by one stroke and his earnings by almost $1 million per season. These fierce competitors certainly do not make a conscious decision to slack off on birdie putts, but their intense aversion to a bogey apparently contributes to extra concentration on the task at hand.

The study of putts illustrates the power of a theoretical concept as an aid to thinking. Who would have thought it worthwhile to spend months analyzing putts for par and birdie? The idea of loss aversion, which

surprises no one except perhaps some economists, generated a precise and nonintuitive hypothesis and led researchers to a finding that surprised everyone—including professional golfers.

Defending the Status Quo

If you are set to look for it, the asymmetric intensity of the motives to avoid losses and to achieve gains shows up almost everywhere. It is an ever-present feature of negotiations, especially of renegotiations of an existing contract, the typical situation in labor negotiations and in international discussions of trade or arms limitations. The existing terms define reference points, and a proposed change in any aspect of the agreement is inevitably viewed as a concession that one side makes to the other. Loss aversion creates an asymmetry that makes agreements difficult to reach. The concessions you make to me are my gains, but they are your losses; they cause you much more pain than they give me pleasure. Inevitably, you will place a higher value on them than I do. The same is true, of course, of the very painful concessions you demand from me, which you do not appear to value sufficiently! Negotiations over a shrinking pie are especially difficult, because they require an allocation of losses. People tend to be much more easygoing when they bargain over an expanding pie.

Many of the messages that negotiators exchange in the course of bargaining are attempts to communicate a reference point and provide an anchor to the other side. The messages are not always sincere. Negotiators often pretend intense attachment to some good (perhaps missiles of a particular type in bargaining over arms reductions), although they actually view that good as a bargaining chip and intend ultimately to give it away in an exchange. Because negotiators are influenced by a norm of reciprocity, a concession that is presented as painful calls for an equally painful (and perhaps equally inauthentic) concession from the other side.

Animals, including people, fight harder to prevent losses than to achieve gains. In the world of territorial animals, this principle explains the success of defenders. A biologist observed that “when a territory holder is challenged by a rival, the owner almost always wins the contest—usually within a matter of seconds.” In human affairs, the same simple rule explains much of what happens when institutions attempt to reform themselves, in “reo Brro Q;reo Brrrganizations” and “restructuring” of companies, and in efforts to rationalize a bureaucracy, simplify the tax code, or reduce medical costs. As initially conceived, plans for reform almost always

produce many winners and some losers while achieving an overall improvement. If the affected parties have any political influence, however, potential losers will be more active and determined than potential winners; the outcome will be biased in their favor and inevitably more expensive and less effective than initially planned. Reforms commonly include grandfather clauses that protect current stake-holders—for example, when the existing workforce is reduced by attrition rather than by dismissals, or when cuts in salaries and benefits apply only to future workers. Loss aversion is a powerful conservative force that favors minimal changes from the status quo in the lives of both institutions and individuals. This conservatism helps keep us stable in our neighborhood, our marriage, and our job; it is the gravitational force that holds our life together near the reference point.

Loss Aversion in the Law

During the year that we spent working together in Vancouver, Richard Thaler, Jack Knetsch, and I were drawn into a study of fairness in economic transactions, partly because we were interested in the topic but also because we had an opportunity as well as an obligation to make up a new questionnaire every week. The Canadian government's Department of Fisheries and Oceans had a program for unemployed professionals in Toronto, who were paid to administer telephone surveys. The large team of interviewers worked every night and new questions were constantly needed to keep the operation going. Through Jack Knetsch, we agreed to generate a questionnaire every week, in four color-labeled versions. We could ask about anything; the only constraint was that the questionnaire should include at least one mention of fish, to make it pertinent to the mission of the department. This went on for many months, and we treated ourselves to an orgy of data collection.

We studied public perceptions of what constitutes unfair behavior on the part of merchants, employers, and landlords. Our overarching question was whether the opprobrium attached to unfairness imposes constraints on profit seeking. We found that it does. We also found that the moral rules by which the public evaluates what firms may or may not do draw a crucial distinction between losses and gains. The basic principle is that the existing wage, price, or rent sets a reference point, which has the nature of an entitlement that must not be infringed. It is considered unfair for the firm to impose losses on its customers or workers relative to the reference transaction, unless it must do so to protect its own entitlement. Consider this example:

> A hardware store has been selling snow shovels for $15. The morning after a large snowstorm, the store raises the price to $20.
> Please rate this action as:
> Completely Fair Acceptable Unfair Very Unfair

The hardware store behaves appropriately according to the standard economic model: it responds to increased demand by raising its price. The participants in the survey did not agree: 82% rated the action Unfair or Very Unfair. They evidently viewed the pre-blizzard price as a reference point and the raised price as a loss that the store imposes on its customers, not because it must but simply because it can. A basic rule of fairness, we found, i Brro Qd, i Brrs that the exploitation of market power to impose losses on others is unacceptable. The following example illustrates this rule in another context (the dollar values should be adjusted for about 100% inflation since these data were collected in 1984):

> A small photocopying shop has one employee who has worked there for six months and earns $9 per hour. Business continues to be satisfactory, but a factory in the area has closed and unemployment has increased. Other small shops have now hired reliable workers at $7 an hour to perform jobs similar to those done by the photocopy shop employee. The owner of the shop reduces the employee's wage to $7.

The respondents did not approve: 83% considered the behavior Unfair or Very Unfair. However, a slight variation on the question clarifies the nature of the employer's obligation. The background scenario of a profitable store in an area of high unemployment is the same, but now

> the current employee leaves, and the owner decides to pay a replacement $7 an hour.

A large majority (73%) considered this action Acceptable. It appears that the employer does not have a moral obligation to pay $9 an hour. The entitlement is personal: the current worker has a right to retain his wage even if market conditions would allow the employer to impose a wage cut. The replacement worker has no entitlement to the previous worker's reference wage, and the employer is therefore allowed to reduce pay without the risk of being branded unfair.

The firm has its own entitlement, which is to retain its current profit. If it faces a threat of a loss, it is allowed to transfer the loss to others. A

substantial majority of respondents believed that it is not unfair for a firm to reduce its workers' wages when its profitability is falling. We described the rules as defining dual entitlements to the firm and to individuals with whom it interacts. When threatened, it is not unfair for the firm to be selfish. It is not even expected to take on part of the losses; it can pass them on.

Different rules governed what the firm could do to improve its profits or to avoid reduced profits. When a firm faced lower production costs, the rules of fairness did not require it to share the bonanza with either its customers or its workers. Of course, our respondents liked a firm better and described it as more fair if it was generous when its profits increased, but they did not brand as unfair a firm that did not share. They showed indignation only when a firm exploited its power to break informal contracts with workers or customers, and to impose a loss on others in order to increase its profit. The important task for students of economic fairness is not to identify ideal behavior but to find the line that separates acceptable conduct from actions that invite opprobrium and punishment.

We were not optimistic when we submitted our report of this research to the *American Economic Review*. Our article challenged what was then accepted wisdom among many economists that economic behavior is ruled by self-interest and that concerns for fairness are generally irrelevant. We also relied on the evidence of survey responses, for which economists generally have little respect. However, the editor of the journal sent our article for evaluation to two economists who were not bound by those conventions (we later learned their identity; they were the most friendly the editor could have found). The editor made the correct call. The article is often cited, and its conclusions Brro Qions Brr have stood the test of time. More recent research has supported the observations of reference-dependent fairness and has also shown that fairness concerns are economically significant, a fact we had suspected but did not prove. Employers who violate rules of fairness are punished by reduced productivity, and merchants who follow unfair pricing policies can expect to lose sales. People who learned from a new catalog that the merchant was now charging less for a product that they had recently bought at a higher price reduced their future purchases from that supplier by 15%, an average loss of $90 per customer. The customers evidently perceived the lower price as the reference point and thought of themselves as having sustained a loss by paying more than appropriate. Moreover, the customers who reacted the most strongly were those who bought more items and at higher prices. The losses far exceeded the gains from the increased purchases produced by the lower prices in the new catalog.

Unfairly imposing losses on people can be risky if the victims are in a position to retaliate. Furthermore, experiments have shown that strangers

who observe unfair behavior often join in the punishment. Neuroeconomists (scientists who combine economics with brain research) have used MRI machines to examine the brains of people who are engaged in punishing one stranger for behaving unfairly to another stranger. Remarkably, altruistic punishment is accompanied by increased activity in the "pleasure centers" of the brain. It appears that maintaining the social order and the rules of fairness in this fashion is its own reward. Altruistic punishment could well be the glue that holds societies together. However, our brains are not designed to reward generosity as reliably as they punish meanness. Here again, we find a marked asymmetry between losses and gains.

The influence of loss aversion and entitlements extends far beyond the realm of financial transactions. Jurists were quick to recognize their impact on the law and in the administration of justice. In one study, David Cohen and Jack Knetsch found many examples of a sharp distinction between actual losses and foregone gains in legal decisions. For example, a merchant whose goods were lost in transit may be compensated for costs he actually incurred, but is unlikely to be compensated for lost profits. The familiar rule that possession is nine-tenths of the law confirms the moral status of the reference point. In a more recent discussion, Eyal Zamir makes the provocative point that the distinction drawn in the law between restoring losses and compensating for foregone gains may be justified by their asymmetrical effects on individual well-being. If people who lose suffer more than people who merely fail to gain, they may also deserve more protection from the law.

Speaking of Losses

"This reform will not pass. Those who stand to lose will fight harder than those who stand to gain."

"Each of them thinks the other's concessions are less painful. They are both wrong, of course. It's just the asymmetry of losses."

"They would find it easier to renegotiate the agreement if they realized the pie was actually expanding. They're not allocating losses; they are allocating gains."

“Rental prices around here have gone up r Brro Qup r Brrecently, but our tenants don’t think it’s fair that we should raise their rent, too. They feel entitled to their current terms.”

“My clients don’t resent the price hike because they know my costs have gone up, too. They accept my right to stay profitable.”