Keeping Score

Except for the very poor, for whom income coincides with survival, the main motivators of money-seeking are not necessarily economic. For the billionaire looking for the extra billion, and indeed for the participant in an experimental economics project looking for the extra dollar, money is a proxy for points on a scale of self-regard and achievement. These rewards and punishments, promises and threats, are all in our heads. We carefully keep score of them. They shape o C Th5ur preferences and motivate our actions, like the incentives provided in the social environment. As a result, we refuse to cut losses when doing so would admit failure, we are biased against actions that could lead to regret, and we draw an illusory but sharp distinction between omission and commission, not doing and doing, because the sense of responsibility is greater for one than for the other. The ultimate currency that rewards or punishes is often emotional, a form of mental self-dealing that inevitably creates conflicts of interest when the individual acts as an agent on behalf of an organization.

Mental Accounts

Richard Thaler has been fascinated for many years by analogies between the world of accounting and the mental accounts that we use to organize and run our lives, with results that are sometimes foolish and sometimes very helpful. Mental accounts come in several varieties. We hold our money in different accounts, which are sometimes physical, sometimes only mental. We have spending money, general savings, earmarked savings for our children's education or for medical emergencies. There is a clear hierarchy in our willingness to draw on these accounts to cover current needs. We use accounts for self-control purposes, as in making a household budget, limiting the daily consumption of espressos, or increasing the time spent exercising. Often we pay for self-control, for instance simultaneously putting money in a savings account and maintaining debt on credit cards. The Econs of the rational-agent model do not resort to mental accounting: they have a comprehensive view of outcomes and are driven by external incentives. For Humans, mental accounts are a form of narrow framing; they keep things under control and manageable by a finite mind.

Mental accounts are used extensively to keep score. Recall that professional golfers putt more successfully when working to avoid a bogey than to achieve a birdie. One conclusion we can draw is that the best golfers create a separate account for each hole; they do not only maintain

a single account for their overall success. An ironic example that Thaler related in an early article remains one of the best illustrations of how mental accounting affects behavior:

> Two avid sports fans plan to travel 40 miles to see a basketball game. One of them paid for his ticket; the other was on his way to purchase a ticket when he got one free from a friend. A blizzard is announced for the night of the game. Which of the two ticket holders is more likely to brave the blizzard to see the game?

The answer is immediate: we know that the fan who paid for his ticket is more likely to drive. Mental accounting provides the explanation. We assume that both fans set up an account for the game they hoped to see. Missing the game will close the accounts with a negative balance. Regardless of how they came by their ticket, both will be disappointed—but the closing balance is distinctly more negative for the one who bought a ticket and is now out of pocket as well as deprived of the game. Because staying home is worse for this individual, he is more motivated to see the game and therefore more likely to make the attempt to drive into a blizzard. These are tacit calculations of emotional balance, of the kind that System 1 performs without deliberation. The emotions that people attach to the state of their mental accounts are not acknowledged in standard economic theory. An Econ would realize that the ticket has already been paid for and cannot be returned. Its cost is "sunk" and the Econ would not care whether he had bought the ticket to the game or got it from a friend (if Eco B Th5motketns have friends). To implement this rational behavior, System 2 would have to be aware of the counterfactual possibility: "Would I still drive into this snowstorm if I had gotten the ticket free from a friend?" It takes an active and disciplined mind to raise such a difficult question.

A related mistake afflicts individual investors when they sell stocks from their portfolio:

> You need money to cover the costs of your daughter's wedding and will have to sell some stock. You remember the price at which you bought each stock and can identify it as a "winner," currently worth more than you paid for it, or as a loser. Among the stocks you own, Blueberry Tiles is a winner; if you sell it today you will have achieved a gain of $5,000. You hold an equal investment in Tiffany Motors, which is currently worth $5,000 less than you paid for it. The value of both stocks has been stable in recent weeks. Which are you more likely to sell?

A plausible way to formulate the choice is this: “I could close the Blueberry Tiles account and score a success for my record as an investor. Alternatively, I could close the Tiffany Motors account and add a failure to my record. Which would I rather do?” If the problem is framed as a choice between giving yourself pleasure and causing yourself pain, you will certainly sell Blueberry Tiles and enjoy your investment prowess. As might be expected, finance research has documented a massive preference for selling winners rather than losers—a bias that has been given an opaque label: the *disposition effect*.

The disposition effect is an instance of *narrowframing*. The investor has set up an account for each share that she bought, and she wants to close every account as a gain. A rational agent would have a comprehensive view of the portfolio and sell the stock that is least likely to do well in the future, without considering whether it is a winner or a loser. Amos told me of a conversation with a financial adviser, who asked him for a complete list of the stocks in his portfolio, including the price at which each had been purchased. When Amos asked mildly, “Isn’t it supposed not to matter?” the adviser looked astonished. He had apparently always believed that the state of the mental account was a valid consideration.

Amos’s guess about the financial adviser’s beliefs was probably right, but he was wrong to dismiss the buying price as irrelevant. The purchase price does matter and should be considered, even by Econs. The disposition effect is a costly bias because the question of whether to sell winners or losers has a clear answer, and it is not that it makes no difference. If you care about your wealth rather than your immediate emotions, you will sell the loser Tiffany Motors and hang on to the winning Blueberry Tiles. At least in the United States, taxes provide a strong incentive: realizing losses reduces your taxes, while selling winners exposes you to taxes. This elementary fact of financial life is actually known to all American investors, and it determines the decisions they make during one month of the year—investors sell more losers in December, when taxes are on their mind. The tax advantage is available all year, of course, but for 11 months of the year mental accounting prevails over financial common sense. Another argument against selling winners is the well-documented market anomaly that stocks that recently gained in value are likely to go on gaining at least for a short while. The net effect is large: the expected after-tax extra return of selling Tiffany rather than Blueberry is 3.4% over the next year. Cl B Th5inge liosing a mental account with a gain is a pleasure, but it is a pleasure you pay for. The mistake is not one that an Econ would ever make, and experienced investors, who are using their System 2, are less susceptible to it than are novices.

A rational decision maker is interested only in the future consequences of current investments. Justifying earlier mistakes is not among the Econ's concerns. The decision to invest additional resources in a losing account, when better investments are available, is known as the *sunk-cost fallacy*, a costly mistake that is observed in decisions large and small. Driving into the blizzard because one paid for tickets is a sunk-cost error.

Imagine a company that has already spent $50 million on a project. The project is now behind schedule and the forecasts of its ultimate returns are less favorable than at the initial planning stage. An additional investment of $60 million is required to give the project a chance. An alternative proposal is to invest the same amount in a new project that currently looks likely to bring higher returns. What will the company do? All too often a company afflicted by sunk costs drives into the blizzard, throwing good money after bad rather than accepting the humiliation of closing the account of a costly failure. This situation is in the top-right cell of the fourfold pattern, where the choice is between a sure loss and an unfavorable gamble, which is often unwisely preferred.

The escalation of commitment to failing endeavors is a mistake from the perspective of the firm but not necessarily from the perspective of the executive who "owns" a floundering project. Canceling the project will leave a permanent stain on the executive's record, and his personal interests are perhaps best served by gambling further with the organization's resources in the hope of recouping the original investment—or at least in an attempt to postpone the day of reckoning. In the presence of sunk costs, the manager's incentives are misaligned with the objectives of the firm and its shareholders, a familiar type of what is known as the agency problem. Boards of directors are well aware of these conflicts and often replace a CEO who is encumbered by prior decisions and reluctant to cut losses. The members of the board do not necessarily believe that the new CEO is more competent than the one she replaces. They do know that she does not carry the same mental accounts and is therefore better able to ignore the sunk costs of past investments in evaluating current opportunities.

The sunk-cost fallacy keeps people for too long in poor jobs, unhappy marriages, and unpromising research projects. I have often observed young scientists struggling to salvage a doomed project when they would be better advised to drop it and start a new one. Fortunately, research suggests that at least in some contexts the fallacy can be overcome. The sunk-cost fallacy is identified and taught as a mistake in both economics and business courses, apparently to good effect: there is evidence that graduate students in these fields are more willing than others to walk away from a failing project.

Regret

Regret is an emotion, and it is also a punishment that we administer to ourselves. The fear of regret is a factor in many of the decisions that people make ("Don't do this, you will regret it" is a common warning), and the actual experience of regret is familiar. The emotional state has been well described by two Dutch psychologists, who noted that regret is "accompanied by feelings that one should have known better, by a B Th5="4ncesinking feeling, by thoughts about the mistake one has made and the opportunities lost, by a tendency to kick oneself and to correct one's mistake, and by wanting to undo the event and to get a second chance." Intense regret is what you experience when you can most easily imagine yourself doing something other than what you did.

Regret is one of the counterfactual emotions that are triggered by the availability of alternatives to reality. After every plane crash there are special stories about passengers who "should not" have been on the plane—they got a seat at the last moment, they were transferred from another airline, they were supposed to fly a day earlier but had had to postpone. The common feature of these poignant stories is that they involve unusual events—and unusual events are easier than normal events to undo in imagination. Associative memory contains a representation of the normal world and its rules. An abnormal event attracts attention, and it also activates the idea of the event that would have been normal under the same circumstances.

To appreciate the link of regret to normality, consider the following scenario:

> Mr. Brown almost never picks up hitchhikers. Yesterday he gave a man a ride and was robbed.
>
> Mr. Smith frequently picks up hitchhikers. Yesterday he gave a man a ride and was robbed.
>
> Who of the two will experience greater regret over the episode?

The results are not surprising: 88% of respondents said Mr. Brown, 12% said Mr. Smith.

Regret is not the same as blame. Other participants were asked this question about the same incident:

Who will be criticized most severely by others?

The results: Mr. Brown 23%, Mr. Smith 77%.

Regret and blame are both evoked by a comparison to a norm, but the relevant norms are different. The emotions experienced by Mr. Brown and Mr. Smith are dominated by what they usually do about hitchhikers. Taking a hitchhiker is an abnormal event for Mr. Brown, and most people therefore expect him to experience more intense regret. A judgmental observer, however, will compare both men to conventional norms of reasonable behavior and is likely to blame Mr. Smith for habitually taking unreasonable risks. We are tempted to say that Mr. Smith deserved his fate and that Mr. Brown was unlucky. But Mr. Brown is the one who is more likely to be kicking himself, because he acted out of character in this one instance.

Decision makers know that they are prone to regret, and the anticipation of that painful emotion plays a part in many decisions. Intuitions about regret are remarkably uniform and compelling, as the next example illustrates.

> Paul owns shares in company A. During the past year he considered switching to stock in company B, but he decided against it. He now learns that he would have been better off by $1,200 if he had switched to the stock of company B.
>
> George owned shares in company B. During the past year he sw
> B Th5 ne
> Who feels greater regret?

The results are clear-cut: 8% of respondents say Paul, 92% say George.

This is curious, because the situations of the two investors are objectively identical. They both now own stock A and both would have been better off by the same amount if they owned stock B. The only difference is that George got to where he is by acting, whereas Paul got to the same place by failing to act. This short example illustrates a broad story: people expect to have stronger emotional reactions (including regret) to an outcome that is produced by action than to the same outcome when it is produced by inaction. This has been verified in the context of gambling: people expect to be happier if they gamble and win than if they refrain from gambling and get the same amount. The asymmetry is at least as strong for losses, and it applies to blame as well as to regret. The key is not the difference between commission and omission but the distinction between default options and actions that deviate from the default. When you deviate

from the default, you can easily imagine the norm—and if the default is associated with bad consequences, the discrepancy between the two can be the source of painful emotions. The default option when you own a stock is not to sell it, but the default option when you meet your colleague in the morning is to greet him. Selling a stock and failing to greet your coworker are both departures from the default option and natural candidates for regret or blame.

In a compelling demonstration of the power of default options, participants played a computer simulation of blackjack. Some players were asked “Do you wish to hit?” while others were asked “Do you wish to stand?” Regardless of the question, saying yes was associated with much more regret than saying no if the outcome was bad! The question evidently suggests a default response, which is, “I don’t have a strong wish to do it.” It is the departure from the default that produces regret. Another situation in which action is the default is that of a coach whose team lost badly in their last game. The coach is expected to make a change of personnel or strategy, and a failure to do so will produce blame and regret.

The asymmetry in the risk of regret favors conventional and risk-averse choices. The bias appears in many contexts. Consumers who are reminded that they may feel regret as a result of their choices show an increased preference for conventional options, favoring brand names over generics. The behavior of the managers of financial funds as the year approaches its end also shows an effect of anticipated evaluation: they tend to clean up their portfolios of unconventional and otherwise questionable stocks. Even life-or-death decisions can be affected. Imagine a physician with a gravely ill patient. One treatment fits the normal standard of care; another is unusual. The physician has some reason to believe that the unconventional treatment improves the patient’s chances, but the evidence is inconclusive. The physician who prescribes the unusual treatment faces a substantial risk of regret, blame, and perhaps litigation. In hindsight, it will be easier to imagine the normal choice; the abnormal choice will be easy to undo. True, a good outcome will contribute to the reputation of the physician who dared, but the potential benefit is smaller than the potential cost because success is generally a more normal outcome than is failure.

Responsib B Th5onche potenility

Losses are weighted about twice as much as gains in several contexts: choice between gambles, the endowment effect, and reactions to price changes. The loss-aversion coefficient is much higher in some situations.

In particular, you may be more loss averse for aspects of your life that are more important than money, such as health. Furthermore, your reluctance to "sell" important endowments increases dramatically when doing so might make you responsible for an awful outcome. Richard Thaler's early classic on consumer behavior included a compelling example, slightly modified in the following question:

> You have been exposed to a disease which if contracted leads to a quick and painless death within a week. The probability that you have the disease is 1/1,000. There is a vaccine that is effective only before any symptoms appear. What is the maximum you would be willing to pay for the vaccine?

Most people are willing to pay a significant but limited amount. Facing the possibility of death is unpleasant, but the risk is small and it seems unreasonable to ruin yourself to avoid it. Now consider a slight variation:

> Volunteers are needed for research on the above disease. All that is required is that you expose yourself to a 1/1,000 chance of contracting the disease. What is the minimum you would ask to be paid in order to volunteer for this program? (You would not be allowed to purchase the vaccine.)

As you might expect, the fee that volunteers set is far higher than the price they were willing to pay for the vaccine. Thaler reported informally that a typical ratio is about 50:1. The extremely high selling price reflects two features of this problem. In the first place, you are not supposed to sell your health; the transaction is not considered legitimate and the reluctance to engage in it is expressed in a higher price. Perhaps most important, you will be responsible for the outcome if it is bad. You know that if you wake up one morning with symptoms indicating that you will soon be dead, you will feel more regret in the second case than in the first, because you could have rejected the idea of selling your health without even stopping to consider the price. You could have stayed with the default option and done nothing, and now this counterfactual will haunt you for the rest of your life.

The survey of parents' reactions to a potentially hazardous insecticide mentioned earlier also included a question about the willingness to accept increased risk. The respondents were told to imagine that they used an insecticide where the risk of inhalation and child poisoning was 15 per 10,000 bottles. A less expensive insecticide was available, for which the risk rose from 15 to 16 per 10,000 bottles. The parents were asked for the discount that would induce them to switch to the less expensive (and less

safe) product. More than two-thirds of the parents in the survey responded that they would not purchase the new product at any price! They were evidently revolted by the very idea of trading the safety of their child for money. The minority who found a discount they could accept demanded an amount that was significantly higher than the amount they were willing to pay for a far larger improvement in the safety of the product.

Anyone can understand and sympathize with the reluctance of parents to trade even a minute increase of risk to their child for money. It is worth noting, however, that this attitude is incoherent and potentially damaging to the safety of t B Th5ry tance ofhose we wish to protect. Even the most loving parents have finite resources of time and money to protect their child (the keeping-my-child-safe mental account has a limited budget), and it seems reasonable to deploy these resources in a way that puts them to best use. Money that could be saved by accepting a minute increase in the risk of harm from a pesticide could certainly be put to better use in reducing the child's exposure to other harms, perhaps by purchasing a safer car seat or covers for electric sockets. The *taboo tradeoff* against accepting any increase in risk is not an efficient way to use the safety budget. In fact, the resistance may be motivated by a selfish fear of regret more than by a wish to optimize the child's safety. The what-if? thought that occurs to any parent who deliberately makes such a trade is an image of the regret and shame he or she would feel in the event the pesticide caused harm.

The intense aversion to trading increased risk for some other advantage plays out on a grand scale in the laws and regulations governing risk. This trend is especially strong in Europe, where the precautionary principle, which prohibits any action that might cause harm, is a widely accepted doctrine. In the regulatory context, the precautionary principle imposes the entire burden of proving safety on anyone who undertakes actions that might harm people or the environment. Multiple international bodies have specified that the absence of scientific evidence of potential damage is not sufficient justification for taking risks. As the jurist Cass Sunstein points out, the precautionary principle is costly, and when interpreted strictly it can be paralyzing. He mentions an impressive list of innovations that would not have passed the test, including "airplanes, air conditioning, antibiotics, automobiles, chlorine, the measles vaccine, open-heart surgery, radio, refrigeration, smallpox vaccine, and X-rays." The strong version of the precautionary principle is obviously untenable. But *enhanced loss aversion* is embedded in a strong and widely shared moral intuition; it originates in System 1. The dilemma between intensely loss-averse moral attitudes and efficient risk management does not have a simple and

compelling solution.

We spend much of our day anticipating, and trying to avoid, the emotional pains we inflict on ourselves. How seriously should we take these intangible outcomes, the self-administered punishments (and occasional rewards) that we experience as we score our lives? Econs are not supposed to have them, and they are costly to Humans. They lead to actions that are detrimental to the wealth of individuals, to the soundness of policy, and to the welfare of society. But the emotions of regret and moral responsibility are real, and the fact that Econs do not have them may not be relevant.

Is it reasonable, in particular, to let your choices be influenced by the anticipation of regret? Susceptibility to regret, like susceptibility to fainting spells, is a fact of life to which one must adjust. If you are an investor, sufficiently rich and cautious at heart, you may be able to afford the luxury of a portfolio that minimizes the expectation of regret even if it does not maximize the accrual of wealth.

You can also take precautions that will inoculate you against regret. Perhaps the most useful is to be explicit about the anticipation of regret. If you can remember when things go badly that you considered the possibility of regret carefully before deciding, you are likely to experience less of it. You should also know that regret and hindsight bias will come together, so anything you can do to preclude hindsight is likely to be helpful. My personal hindsight-avoiding B Th5he ything policy is to be either very thorough or completely casual when making a decision with long-term consequences. Hindsight is worse when you think a little, just enough to tell yourself later, “I almost made a better choice.”

Daniel Gilbert and his colleagues provocatively claim that people generally anticipate more regret than they will actually experience, because they underestimate the efficacy of the psychological defenses they will deploy—which they label the “psychological immune system.” Their recommendation is that you should not put too much weight on regret; even if you have some, it will hurt less than you now think.

Speaking of Keeping Score

> “He has separate mental accounts for cash and credit purchases. I constantly remind him that money is money.”

“We are hanging on to that stock just to avoid closing our mental account at a loss. It’s the disposition effect.”

“We discovered an excellent dish at that restaurant and we never try anything else, to avoid regret.”

“The salesperson showed me the most expensive car seat and said it was the safest, and I could not bring myself to buy the cheaper model. It felt like a taboo tradeoff.”