Emotions and Economic Theory

Jon Elster

Journal of Economic Literature, Vol. 36, No. 1. (Mar., 1998), pp. 47-74.

Stable URL:
http://links.jstor.org/sici?sici=0022-0515%28199803%2936%3A1%3C47%3AEAET%3E2.0.CO%3B2-9

Journal of Economic Literature is currently published by American Economic Association.

Journal of Economic Literature
Vol. XXXVI (March 1998), pp. 47–74

Emotions and Economic Theory

JON ELSTER
Department of Political Science, Columbia University

I am grateful to Robert Frank, George Loewenstein, and an anonymous referee for their comments on an earlier draft of this article. Many of the issues raised here are discussed at greater length in Jon Elster (forthcoming).

1. *Introduction*

THE SURVEY article on "Psychology and Economics" by Matthew Rabin in this issue of the *Journal* contains virtually no reference to the emotions. This neglect is typical. Although economists occasionally use emotion terms such as envy or guilt, the referents of these words usually have little to do with emotions as philosophers and psychologists from Aristotle onwards have understood them. And whereas a handful of economists have in fact appealed to emotions in this more traditional sense, it is always to address specific issues rather than to suggest a general way of incorporating emotions into the tool kit of economics.

The neglect is not limited to economists. Until recently, psychologists were more concerned with cognition than with emotion. (I use "psychology" in a broad sense that also includes neurobiology.) If behavioral economics has borrowed mainly from cognitive psychology, it is partly because there was little else to borrow from. Also, in Daniel Kahneman and Amos Tversky cognitive psychology has had two outstanding practitioners who addressed themselves directly to the concerns of economists. There are no comparable figures within the psychology of the emotions. In fact, references to economic theory by emotion theorists are perhaps even rarer than references to emotion theory by economists. The two fields seem to exist in near-complete isolation from each other.

One reason for this state of affairs may have to do with the different explananda of the two disciplines. Whereas economists mainly try to explain behavior, emotion theorists try to explain emotions. By and large, psychological studies of the emotions have not focused on how emotions generate behavior. Instead, they have tried to identify the proximate or ultimate causes of the emotions. To the extent that psychologists are concerned with behavior, it is usually with *action tendencies* rather than with observable actions. There are important exceptions to this statement, but I think it is roughly true. In the authoritative *Handbook of Emotions* (Michael Lewis and Jeannette Haviland 1993), for instance, not one of 44 articles is exclusively devoted to the role of the emotions in the generation of (human) behavior.[1] In a survey of 12 unre-

[1] A partial exception is the contribution by Alice Isen (1993), who shows that positive affect can enhance efficacy in dealing with a given task. She does not address, however, the role of the emotions in defining the task itself, nor the many ways in which emotions can undermine the efficacy of

solved questions in emotion theory (Paul Ekman and Richard Davidson 1994), the only one that is related to behavior is "What is the function of emotions?" A question which is lacking from their survey—not because it has been answered, but because it has not even attained the status of an unresolved problem—is the following: "How can emotions help us explain behavior for which good explanations seem to be lacking?" This is the main focus of the present article.

I shall proceed as follows. In Section 2, I briefly summarize the features of emotions emphasized by psychologists. In Section 3, I address the question whether emotions can be chosen, be it for their intrinsic value or for their instrumental usefulness. In Section 4, I discuss the converse issue, whether emotions can help us make choices when rationality by itself is insufficient. In Section 5, I consider what is probably the most important issue in this area, viz. how emotions may combine with other motivations such as rational self-interest to produce behavior. Section 6 offers a brief conclusion.

2. *What Are Emotions?*

There is a large degree of consensus in the scholarly literature on what emotions there are, and a quite good agreement on what emotions are.

2.1 *What Emotions There Are*

Among the states that unambiguously qualify as emotions we may first list various social emotions: anger, hatred, guilt, shame, pride, pridefulness, admiration, and liking.[2] Second there are various counterfactual emotions generated by thoughts about what might have happened but didn't: regret, rejoicing, disappointment, elation (Jonathan Baron 1994, pp. 367–72). Third, there are emotions generated by the thought of what may happen: fear and hope. Fourth, there are emotions generated by good or bad things that have happened: joy and grief. Fifth, there are emotions triggered by the thought of the possessions of others: envy, malice, indignation, and jealousy. Finally there are cases that do not fall neatly into any special category, such as contempt, disgust, and romantic love or "limerence" (see 5.5). Borderline or controversial cases include surprise, boredom, interest, sexual desire, enjoyment, worry, and frustration. All of these emotions also allow for innumerable variations and nuances, depending on the exact nature of the beliefs that trigger them. Thus if I believe that another has violated my interest, I may feel anger; if I believe that in doing so he has also violated a norm, I feel indignation.

Whether these emotions are universal or culture-specific remains an unresolved issue (see for instance the essays in Richard Shweder and Robert LeVine, eds. 1984). A plausible (but unproved) intermediate position is that all or most of the enumerated emotions are universal in the sense that their typical physiological and behavioral expressions are found in all societies, but that some societies may lack a cognitive label for a given emotion. Thus it has been argued that the notion of *guilt* did not exist in classical Greece (Bernard Williams

task performance. A basic paradox of (many) emotions can in fact be stated as follows: "Emotions provide a meaning and sense of direction to life, but they also prevent us from going steadily in that direction" (Elster 1989a, p. 70).

[2] These eight emotions can be generated from three dichotomies: the emotion may be directed toward oneself or toward another person, toward the behavior of the target individual or his character, and involve a positive or a negative evaluation. Thus guilt is to shame as anger to hatred.

1993), that in Western Europe the notion of romantic *love* did not exist until the eleventh century (Clive S. Lewis 1936), that it is only recently that *boredom* has come be viewed as an involuntary mental state rather than as a sin (Patricia M. Spacks 1995), and that Tahitians diagnose what we would call *depression* as mere fatigue (Robert Levy 1973). Conceptualization of a state as an emotion is a necessary condition for that emotion to trigger *meta-emotions*, as when we feel shame of envy or guilt about our anger. It is also a necessary condition for triggering what one might call *second-party emotions*, as when we feel contempt for another person's fear or hope that our love is requited.

2.2 *What Emotions Are*

The emotions listed above are typically distinguished from each other, as well as from non-emotional mental states, by a number of observable features. I shall use six features to define the emotions: cognitive antecedents, intentional objects, physiological arousal, physiological expressions, valence, and action tendencies. These were already noted by Aristotle and remain central in modern discussions (e.g., Nico Frijda 1986). There is not a perfect fit between the definition and the phenomena enumerated in 2.1. In fact, there does not seem to be a single feature that is invariably found in all emotional phenomena. Joseph LeDoux (1995, pp. 1049–50; 1996, pp. 126–27) suggests that the idea of "emotion" may in fact not be a useful scientific category, in the sense of not forming what philosophers of science call "a natural kind." When we know more about the neurobiology of the various emotions, we may come to see them as being made up of several classes that relate to each other as whales to sharks or birds to bats—superficially similar but with different causal histories. This being said, the features to be enumerated seem to define a roughly homogeneous class for the purpose of explaining behavior.

2.3 *Cognitive Antecedents*

Emotions differ from other "visceral factors" (Loewenstein 1996) such as pain, hunger and drowsiness in that they are triggered by beliefs. Although some emotions may be triggered by sensory signals rather than by cognitions (LeDoux 1996), and pain as well as hunger may be influenced by beliefs, the contrast remains broadly valid. Whereas studies of other visceral motivations, including addictive cravings, can learn much from the study of animal behavior, the central role of beliefs in the formation of emotions implies a limited role for animal studies. Objects of beliefs may be observable or unobservable, physical or mental, and real or imagined. Animals can only form beliefs about real, physical objects. These need not be observable. We know from many studies that animals are capable of forming mental representations of physical objects that are absent from the present sensory field (Elster 1983a, pp. 132–33). But there is no evidence that animals can form beliefs about mental states such as beliefs, emotions and motivations, or that they can form counterfactual beliefs.

2.4 *Intentional Objects*

Emotions also differ from other visceral factors in that they have an intentional object: they are *about* something. The object of an emotion may be a person (envy of a wealthier person) or a state of affairs (indignation with world poverty). Usually, the object of the emotion is closely tied to its cognitive antecedent. The object of anger is the person whom we believe to have hurt us. In some cases, the object may be in-

determinate. If we are humiliated in front of others, we may feel anger at the person who humiliates us *or* shame before the audience. If a parent gives a toy to one child but not to another, the latter may feel envy at the sibling *or* anger at the parent. In these cases, the nature of the emotion as well as its object is indeterminate. A case in which only the object is indeterminate arises when *A* causes *B* to hurt *C*, in which case *C*'s anger may be directed at *B or* at *A*.

Using an example from James Fearon and David Laitin (1996) suppose that member *A* of ethnic group *X* hurts member *B* of ethnic group *Y* and that members of *Y* retaliate with a general attack on all members of *X*. In that situation, a member of *X* may either feel anger at his co-member *A or* direct his anger at *Y*. This point is related to a distinction Fearon and Laitin make between two ways in which inter-ethnic cooperation can be maintained. On the one hand, there can be a "spiral-equilibrium" in which each member of one group is deterred from defecting in interactions with members of another ethnic group by the knowledge that his defection will trigger defection by all members of the other group in interactions with all members of his group. On the other hand, there can be an "in-group policing equilibrium" in which defection in out-group interaction is prevented by the knowledge that it will be punished by defection when he interacts with other members of his own group. In the first case, either of the two angry reactions could arise. The first—anger at one's co-member that has triggered the massive retaliation—might transform the spiral-equilibrium into an in-group policing equilibrium. The second reaction—anger at the other group—would support the spiral equilibrium.

2.5 *Physiological Arousal*

Emotional states are characterized by hormonal changes and by changes in the autonomic nervous system (Frijda 1986, ch. 3; Robert Levenson 1992), experienced as burns, stabs, pangs, hot flashes, sinking feelings, and the like. Sometimes, however, we use emotion terms to refer to states that lack this visceral feature. When we say we are afraid, we may refer to the aroused emotional state or simply to a complex of beliefs and desires, as when we say we're afraid it's going to rain (Robert Gordon 1987). When we say we regret something we did, we may mean simply that we wish we hadn't done it or we may refer to a wrenching feeling, "a pang, a stab, waves of stabs" (Amélie Rorty 1980, p. 496). Although emotions without arousal are a bit like Hamlet without the Prince of Denmark, one might be able to model some aspects of their effect on behavior without referring to this feature. I return to that question in Section 5 below.

2.6 *Physiological Expressions*

Emotions have characteristic observable expressions (Frijda 1986, ch. 2). These include bodily posture, voice pitch, flushing and blushing, smiling and baring one's teeth, laughing and frowning, weeping and crying. Many expressions are directly functional, whereas others are by-products of action patterns rather than functional parts of them. Loudness of voice or compression of the lips, for instance, do not directly enhance coping, but follow from the general mobilization of the organism against danger. Expressions of emotions may serve as signals to others, whether or not they owe their origin to the signaling function. These expressions are to varying degrees under the

control of the will. Nobody can blush at will, but some people can make themselves cry. It is possible to imitate facial expressions and bodily postures that signal fear, anger, sadness, and joy, although most people can't do it (Ekman 1992). In cultures where words are usually accompanied by vivid movements of the hands, lying can be detected by the absence of these gestures, because the concentration required for a convincing lie interferes with the spontaneous gesturing. Most people are not capable of such detection, however, at least not without special training (Ekman 1992).

2.7 *Valence*

This is the term psychologists use to denote the fact that emotions can be located on a pleasure-pain scale, with a neutral zero point of emotional indifference. Although emotions that are high on arousal also tend to be high on positive or negative valence, there are exceptions. First, because arousal itself has many components that co-vary only imperfectly with each other (Frijda 1986, pp. 168–71), the very idea of a correlation between valence and arousal is ambiguous. Second, an emotion may be high on arousal and low in valence (embarrassment), and vice versa (boredom). Third, mixed emotions such as the bittersweet feeling of nostalgia may be high on arousal but have zero net valence. This being said, for most of the emotions that matter for behavior high arousal goes together with high valence. Both contribute to the urgency of action tendencies and to the short-circuiting of cognition.

2.8 *Action Tendencies*

As defined by Frijda (1986, pp. 70, 78), these are "states of readiness to execute a given kind of action. . . . Action tendencies have the character of urges or impulses." The action tendency of shame is to hide or disappear; that of guilt, to make atonements or to confess; that of envy and malice, to destroy; that of love, to approach and touch the other person; that of anger, to hurt the person who has hurt oneself. Fear has two action tendencies: fight or flight. Pride, regret, and some other emotions seem to have none.

An action tendency may lead to immediate action or be modified by one of several regulatory systems. In the former case, by assumption, no choice is involved. In the latter case, too, the modification of the action tendency may occur without choice, through inhibitory mechanisms of the autonomic nervous system (Frijda 1986, pp. 158–61, 405). From the choice-theoretic point of view, social regulation of action tendencies is the more important phenomenon. Social norms can inhibit spontaneous action tendencies. A fear-induced tendency to flee may be kept in check by norms against cowardice (Norman Dixon 1976, p. 197). The destructive urge in envy may be inhibited by the strong condemnation of envy that is found in virtually all societies. Yet social norms can also amplify action tendencies, as in the case of revenge (see 5.5).

3. *Choosing Emotions*

Emotions can be valuable or useful. Joy and love are intrinsically pleasant, and anger can be useful to deter an enemy. They can also be undesirable or harmful. Shame and grief are intrinsically unpleasant, and fear may reduce one's capacity to deal with danger and also expose one to the disapproval of others. Hence it would seem natural to ask whether emotions—having them or avoiding them—could be the object of rational choice. To the extent that emo-

tions are valued for their impact on others, we may also ask whether people can choose the *expressions* on the basis of which others impute emotions to oneself. I shall first discuss some economic models that address the last issue, and then consider some that rely on the idea that the emotions themselves can be chosen.

3.1 *Choosing Emotional Expressions*

In a model of cooperative behavior, Frank (1988) relies on the fact that emotional expressions are under the partial control of the agent. His argument has three premises. First, emotional dispositions are imperfectly indicated to others by the outward expressions of occurrent emotions. Second—and that is why the indication is only imperfect—even those who do not have the dispositions can simulate the expressions. Third, simulators can be detected, at some (fixed) cost to the detectors. Applying these premises to a world in which agents engage in one-shot prisoner's dilemma interactions with others, Frank shows that there will be some specific proportion of honest and dishonest individuals in the equilibrium state (frequency-dependent polymorphism). In that state, the honest individuals are exactly indifferent between scrutinizing and not scrutinizing their interaction partners, because the sum of the direct and opportunity costs of scrutinizing a potential partner are exactly equal to the expected opportunity cost of not scrutinizing him. The latter cost is the probability that a partner chosen at random will be dishonest multiplied by the difference between the cooperative payoff and the "sucker" payoff in the prisoner's dilemma. When the proportion of cooperators exceeds the equilibrium share, the probability falls so that scrutiny no longer pays, which allows non-cooperators to survive.[3]

People may also simulate emotional expressions for purposes of deterrence. Richard Nixon deliberately cultivated an appearance of erratic and emotional behavior, in order to persuade the Soviets that he could not be counted on to react rationally to a first strike (Walter Isaacson 1992, pp. 163–64, 181–82). Even though others may suspect that the person who behaves emotionally is doing so merely to cultivate an appearance of irrationality, the possibility that he might be truly irrational can be sufficient to modify their behavior. Thus in the finitely iterated prisoner's dilemma, cooperation can be sustained almost up to the last game if there is common knowledge that one of the players may be irrational (David Kreps et al. 1982).

3.2 *Choosing Emotions*

To discuss the question whether emotions can be chosen, I shall make two distinctions. First, there is a distinction between occurrent emotions and emotional dispositions. In theory, a person might be irascible but never angry, if

[3] The model is elegant and not implausible. I would like to question, though, its mixed evolutionary-cum-intentional basis. To explain the emergence of honesty, Frank appeals to natural selection. If we start off with a share of cooperators less than the equilibrium share, "the cooperators will get a higher average payoff, which means that their share in the population will grow" (Frank 1988, p. 62). To explain the emergence of scrutiny, however, he appeals to "the *decision* facing a cooperator who is trying to decide whether to pay the cost of scrutiny" (Frank 1988, p. 61). Rather than assuming that there is a gene for scrutinizing behavior as well as one for honest behavior he argues that scrutiny is a matter of rational decision. I find it hard to imagine the early hominids—to whom this argument is presumably meant to apply—making that kind of decision. The alternative view—that there is a gene for scrutinizing—is also implausible, because on Frank's theory it would have to be switched off and on according to the share of cooperators in the population.

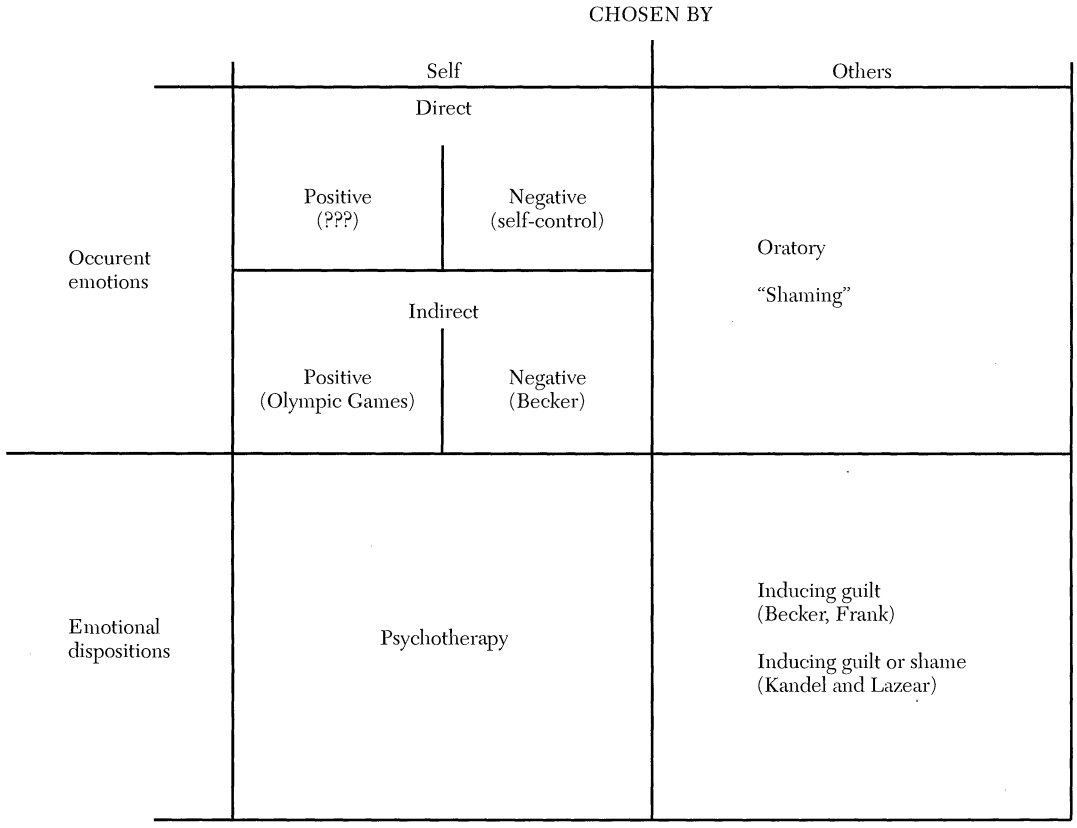

Table 1.

others, knowing his disposition, avoid provoking him. In practice, of course, he would have to show actual anger from time to time to maintain a reputation for being irascible. The distinction is nevertheless fundamental. The experience of shame, for instance, is intensely unpleasant. No one would ever take steps to seek it out. Yet a person might try to develop a disposition to feel shame or, more plausibly, to inculcate it in his children, the goal being the avoidance of shame feelings by avoiding the occasions or abstaining from the actions that might cause it. Second, asking whether emotions can be chosen is to invite the question: chosen *by whom*? On the one hand, the emotion or emotional disposition might be chosen by the agent himself, for its intrinsic or instrumental value. On the other hand, person II might try to trigger or inculcate the emotion in person I for reasons of his own. These could be altruistic motives towards person I but also purely self-interested or even spiteful motives. This yields the following fourfold table:

If I want to have or avoid an occurrent emotion, I can go about it directly or indirectly. The direct path is to choose to have the emotion or to choose not to have it. The indirect path is to seek out or avoid the situations that will predictably trigger it. In each case, the positive and negative cases (choosing to

have the emotion or to avoid it) present different issues.

3.3 *Choosing to Have a Positive Emotion*

It is generally agreed that emotions cannot be chosen in this sense. Emotions are *passively* undergone (cp. the synonymous term "passion") rather than actively chosen. Although some writers (Jean-Paul Sartre 1936; Roy Schafer 1976; Robert Solomon 1993) argue that we do choose our emotions, their arguments are not convincing (Elster, forthcoming). Although emotions can be consciously modified or to some extent conjured up at will, e.g., by actors trained in the Stanislawski tradition or by people in service professions who are trained to smile sincerely (Arlie Hochschild 1983), these are marginal phenomena. One might try to save the claim that emotions can be chosen by stipulating that there are constraints on the choice or that the costs might be prohibitive. These constraints and costs would in fact reflect, however, the involuntary nature of the emotions. The fact that there may be a margin of adjustment does not support the stronger claim.

3.4 *Choosing Not to Have a Negative Emotion*

Often, it is possible to block an emotion at the outset. Even when a pang of envy at the sight of another's greater possession or success arises spontaneously in the mind, we may nip it in the bud by thinking about something else or mentally shrugging our shoulders. Yet in an important class of cases this option may not be feasible, due to the combination of two features of the emotions. First, for emotions such as anger there may be a "point of no return" (Frijda 1986, pp. 43–45, 91, 241) beyond which self-control is of no avail. The same claim has been made about

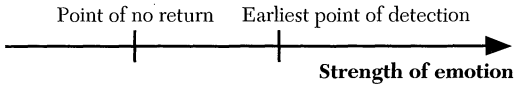

Figure 1.

love. Second, it may take a while before people notice that they are angry or in love. We have all heard and many of us uttered the angry statement, "I am not angry!" If these two points occur as depicted in Figure 1, we cannot choose not to have the emotion.

This claim was in fact made by Michel de Montaigne (1991, p. 1154): "The infancies of all things are feeble and weak. We must keep our eyes open at their beginnings; you cannot find the danger then because it is so small; once it has grown, you cannot find the cure." (See also Ekman 1992, p. 47.)

3.5 *Seeking out Favorable Occasions*

People often seek out or create occasions on which they will predictably experience some pleasant or useful emotion. Going to a movie or a basketball game involves the belief—which may be frustrated—that pleasant emotions will be generated. When people decide to have children, it is in part for the same reason. Generating occasions for pleasant emotions is a major part of people's lives. Yet emotional satisfactions differ in one important aspect from the hedonic satisfaction generated by a good meal: they are amplified by surprise. As an illustration, consider sports-generated satisfaction. In 1994, Norway organized the Winter Olympics, where Norwegian participants won a large number of gold medals. In an ex post assessment of the value of this event for that country's population, the sheer emotional exuberance generated by the Norwegian winners would be a major item on the income side of the balance

sheet. It seems plausible that these emotional gains by themselves were large enough to justify the huge construction expenses. Yet because this experience could not have been planned, the expenses may not have been justified ex ante. The point is not that nobody could count on the Norwegians being so successful. It is that if their victories *had* been predictable, they would have generated much less excitement. If the actual emotional satisfaction from Norwegian success in the Games was a decreasing function $f(p)$ of the ex ante probability p of Norwegian success, the expected emotional satisfaction $p \cdot f(p)$ may have been too small to justify the investment, for the actual p or even for any p.

3.6 *Avoiding Unfavorable Occasions*

Because Montaigne was aware of the difficulties of direct self-control, he recommended the indirect method. To prevent undesirable emotions, we may either ensure that the events that might trigger them do not occur or that, if they do, we do not come to know about them. Montaigne (1991, p. 1075) adopted both strategies: "I shun all occasions for annoyance and keep myself from learning about things going wrong." Concerning the first strategy, he refers to the example of King Cotys: "He paid handsomely when some beautiful and ornate tableware was offered to him, but since it was unusually fragile he immediately smashed the lot, ridding himself in time of an easy occasion for anger against his servants." Concerning the second, he said about himself that "I prefer people to hide my losses and my troubles from me. . . . I prefer not to know about my estate-accounts so as to feel my losses less exactly. Whenever those who live with me lack affection and its duties I beg them to deceive me, paying me by putting a good face on things" (Montaigne 1991, pp. 731–32). Yet as is clear from these examples, the avoidance method has its costs. People probably make different tradeoffs between the costs and benefits of staying away from situations on which they might suffer an emotional reaction they want to avoid. In Montaigne's case, it is clear that to him peace of mind was more important than material losses.

Gary Becker (1996, ch. 12) has recently offered a model of such avoidance behavior with respect to guilt and love. Except for those who enjoy meeting beggars because it make them "feel superior or lucky" (Becker 1996, p. 232), people avoid beggars because they want to avoid the feelings of guilt triggered by the encounters. It is not clear from Becker's discussion whether the root cause is the negative valence of the emotion or the monetary loss associated with the giving which is the action tendency of guilt. When he asserts that "people do not want to encounter beggars, *even though* they may contribute handsomely after an encounter" (Becker 1996, p. 233), the phrase that I have italicized suggests the first reading. On the second reading, we would expect "because" rather than "even though." If the case of guilt is supposed to be analogous to that of love, the second reading must be chosen. Here, Becker's argument is that high-income individuals stay away from low-income individuals of the opposite sex, because they know that they might fall in love with them and that if they do so they will want to share their income with them. In this case the emotion itself has positive valence, but is avoided because of the loss of income that will be predictably induced by the associated action tendency. Because guilt as well as love may induce generous feeling and because generosity is costly, individuals

who care about their income stay away from occasions that might trigger these emotions. Yet in the case of love, this avoidance behavior might have the cost that if the set of partners is very restricted, one might not meet *anyone* who triggers the emotion. (The plot of *Pride and Prejudice* would not have gotten off the ground if Darcy had acted in accordance with Becker's analysis.) Hence the rational individual looking for a spouse might want to restrict the search to a set of optimal size, which would also include some individuals with lower earning potential. And for some people, finding the right person might be more important than any associated costs.

3.7 *Emotional Character Planning*

There is a time-honored tradition in philosophical and religious thought that the wise man (women were rarely thought capable of the same feats) should be able to shape his emotional dispositions. For Seneca and Plutarch, for instance, the strategy of emotional self-management discussed above was only second-best. The man fully in control of himself would have no need to avoid occasions for anger, because he would have trained himself never to feel anger. The contemporary version of this stoicist argument is psychotherapy. Many people seek therapy because they are worried about their emotional reaction patterns—their tendency to feel inappropriately angry or guilty, their inability to feel love or to grieve, and so on. They want to become a different kind of person, someone who would neither have excessively strong nor excessively weak emotional reactions to events and people they encounter.

For this strategy to be rational ex ante, three conditions must be fulfilled. First, there must exist an efficient and reliable technology of emotional planning. Second, the course of external events should be reasonably predictable. Occurrent emotions are jointly caused by emotional dispositions and events that are outside the agent's control, and if the latter cannot be foreseen there may not be much point in modifying the former. A stoic attitude may be useful if one goes bankrupt, but might otherwise be a killjoy. And third, the cost of using the technology should not exceed the benefits. In the case of psychotherapy, there is no need to discuss the satisfaction of the second and third conditions, as the first is manifestly not satisfied. An important study by Robyn Dawes (1994) shows that with the exception of some forms of behavioral therapy, psychotherapy essentially does not offer any benefits over and above those that would be provided by talking with any warm and interested person. The efficacy of therapy may be enhanced by the therapist's *belief* in the efficacy of his theory, but because that is true of therapists in all schools of therapy this does not prove that efficient technologies are available, only that the self-confidence of the therapist can be an important factor.

3.8 *Inducing Emotions in Others*

If emotions are predictably triggered by beliefs about the external environment, other people could try to induce emotions by manipulating either the beliefs or the environment. The art of rhetoric, as practiced by orators and as analyzed in Aristotle's *Rhetoric*, is largely about manipulating other people's emotional reactions by shaping their beliefs. The recent practice of "shaming," which is intended to be a more humane supplement to incarceration, is supposed to work by altering the environment in which the offenders find themselves. Both ideas, however, have serious difficulties.

In the case of oratory, the basic problem is that the cool-headedness that is required for rational manipulation of the audience may interfere with the efficacy of the manipulation. On the one hand, Chaim Perelman and Lucie Olbrechts-Tyteca (1969, p. 24) argue that "the man swayed by passion argues without taking sufficiently into account the audience he is addressing" and hence is less effective in swaying them. On the other hand, if Ekman (1992) is right in his claim that it is difficult to simulate the full range of emotional expressions, and Elaine Hatfield, John Cacioppo, and Richard Rapson (1994) are right in their argument that emotional contagion is based on (i) mimicry of the emotional expression of others and (ii) feedback from the expressions that are mimicked to the emotions themselves, we would expect this process to be less effective if the expressions are only partly realized. Depending on the net effect of these two opposing mechanisms, rational provocation of the emotions of others through oratory could be either more or less effective than speeches which are themselves grounded in passion. Although this does not amount to an intrinsic limitation on the purposive inducement of emotions in others, it could make the task quite difficult.

The strategy of shaming runs into the problem that emotions may be triggered by beliefs about the motivations of others (Rabin 1993). If you buy a car that is fancier than mine, I may be envious. If I also believe that you enjoy my envy, it may turn into resentment. If I believe that you bought the car in order to make me envious, it may become murderous. In the first case, the emotion is triggered by (my belief about) your action; in the second case, by (my belief about) your emotion; in the third case, by (my belief about) the motivation behind your action. Such motivation-dependent emotions are very common. A gift may be met with gratitude or with resentment, depending on the motivation that the recipient imputes to the donor (William Miller 1993, ch.1). "An income distribution that could be tolerable as an accidental or random event . . . might lead to violent revolt if seen to be the result of conscious choice on the part of another economic agent" (Jack Hirshleifer 1987, p. 317). Similarly, an expression of contempt may induce shame if seen as spontaneous, but cause anger if seen as intended to induce shame, which is why the policy of punishing criminals by "shaming" them risks being counterproductive (June Tangney, interviewed in the *New York Times*, January 16, 1997).

3.9 *Inculcating Emotional Dispositions in Others*

A similar problem can arise with respect to the last technique for "choosing emotions," the case in which one agent tries to create an emotional disposition in another agent. Thus both Becker (1996, pp. 152–55) and Frank (1988, p. 93) argue that parents try to inculcate guilt in their children—not the occurrent emotion (although some parents no doubt try to induce that too), but the disposition to have it. Whereas I find Frank's argument somewhat plausible, I believe that Becker's argument fails. In Frank's analysis, parents try to inculcate guilt in the children for the *benefit of the children*. Essentially, guilt acts as a current proxy for long-term rewards that might otherwise fail to motivate the agent. Rational parents will allocate some resources in reducing the rate of time discounting in their children and some resources in inculcating guilt, in amounts determined by the equalization of marginal productivity.

Although I suspect that the process by which guilt is inculcated is less intentional than suggested by Frank, the model does at least describe an internally coherent intention. By an incoherent intention I mean the intention to induce emotion *X* by behavior that would induce *X* if it was spontaneous but that induces emotion *Y* if believed to be motivated by the intention to induce *X*. The intention to shame is, in this sense, incoherent. Although a person with an incoherent intention may try to get around this problem by hiding his motivation, this requires an effort that should itself be counted as a cost and may in a given case be hard to achieve successfully.

In Becker's model, parents try to inculcate guilt in the children for the *benefit of the parents*. He does not imply that parents care only for themselves. Because they also care for their children, they want them to be well off; hence they will invest in their education. At the same time, they want to be well off themselves in their old age. They can achieve this end by reducing the amount of bequests they leave to their children, or by investing in actions that induce guilt in the children, so that they will take care of their parents when they grow old. Because of their altruism, the parents suffer when their children feel guilty. They also suffer when the children, to relieve their guilt, transfer income to the parents and thereby make themselves worse off. Given these various interconnections, optimal investments by parents in the education and guilt of their children, as well as optimal bequests, are then determined by the appropriate marginal balancing.

Note that as in the analysis of beggar-induced guilt discussed above, the argument refers both to the negative valence of guilt and to the action tendency induced by the emotion. On the one hand, the guilt of the children is costly to the parents, because they care about the welfare of their children. On the other hand, it is beneficial to the parents, because it induces the children to support them in old age. Becker (1996, p. 159) also assumes, however, that "children feel less guilty when they contribute more." If the parents anticipate that effect—as they should—the cost to them of their children's guilt should also be reduced. As far as I can judge from Becker's compact treatment, he does not take account of this implication. In calculating the cost of the children's guilt to the parents, he considers the pre-transfer situation rather than the more relevant post-transfer situation.

Although Becker does not specify what he means by "investment in guilt," it could be spelled out as follows. In raising children, example tends to work better than prescription or manipulation. "Do as I say, not as I do" is notoriously ineffective. To ensure that the children will feel guilty enough to support them, parents may have to incur the cost of supporting their own parents. Yet what is missing in this analysis is that children may also feel love for their parents, not only guilt when they fail to support them. (In fact, one reason they love their parents may be that they observe how loving the latter are toward *their* parents.) There is an unjustified asymmetry in assuming that parents transfer income to the children because they love them and want them to be better off, whereas children transfer income to their parents only to reduce their own guilt. Why assume that what matters for the children is the amount they transfer to their parents rather than the post-transfer income of the parents? I think many children support their parents because they love

them. Moreover, I do not think this love is a result of any previous parental investment in filial love. Were Becker to make that argument, we would have to ask him whether the parents' love for their children could not also be result of the children investing in parental love (by "playing cute" and so forth).

I have two final objections to this analysis. First, parental investment in guilt might not be rational if, as is plausible, the guilt is largely an effect of social norms to the maintenance of which any given parent can only make a tiny contribution. Second and more important, if the inculcation of guilt were motivated mainly by a desire to profit from it, the targets would not feel guilty. Rather as argued above in the case of shame, they would be angry. In this sense, Becker's model is incoherent in the sense defined above. The parental strategy of hiding the self-interested motivation from the children is especially unlikely to be successful in the intimate atmosphere of the family.

The strategy of hiding one's intentions might seem more likely to succeed in the impersonal atmosphere of the firm, which has been the object of a similar analysis by Eugene Kandel and Edward Lazear (1992). This article makes the interesting point that investments by employers in creating respectively guilt and shame in their employees differ in their temporal structure. Whereas guilt requires a heavy one-shot investment, shame requires continuous low-level investments in monitoring. Yet their argument, too, suffers from the problem of internal incoherence. Employees are not like children. If employers try to manipulate them into feelings of guilt and shame, they are likely to notice it and get angry instead. If they are unionized, this outcome is extremely likely.

4. *Emotions and the Neurobiology of Decision Making*

The main exception to my claim that writers on emotions tend to ignore how they might affect economic behavior comes from neurobiological studies (Antonio Damasio 1994; LeDoux 1996). These and other writers argue that emotions improve decision making in two respects. First, they enable us to avoid procrastination—to make *some* decision when that is what matters rather than making the optimal decision. Second, in some cases the emotions can actually help us make the *best* decision. In both cases, it is assumed that decision guided by emotions *and* reason is better than what can be achieved by rational deliberation alone.

4.1 *Emotions as Tie-breakers*

The earliest statement of the first problem was by the philosopher Ronald de Sousa (1987). He observed that in many situations, rational-choice theory is *indeterminate*, in that it does not allow us to identify the uniquely optimal action. Although it is not fully clear what kind of indeterminacy he has in mind, I believe it is rooted in the paradox of information-gathering first identified by Sidney Winter. He observed (1964, p. 252) that the attempt to reduce satisficing (Herbert Simon 1955) to a form of maximizing gives rise to an infinite regress, because the "choice of a profit-maximizing information structure itself requires information, and it is not apparent how the aspiring profit maximizer acquires this information, or what guarantees that he does not pay an excessive price for it."

De Sousa (1987, p. 195) writes that the "role of emotion is to supply the insufficiency of reason . . . For a variable but always limited time, an emotion limits the range of information that the

organism will take into account, the inferences actually drawn from a potential infinity, and the set of live options from which it will choose." Along similar lines, the cognitive psychologists Philip Johnson-Laird and Keith Oatley (1992) argue that because the ideal of "impeccable rationality" assumes that "there are no surprises, no misunderstandings, no irresolvable conflicts," it cannot guide action in situations that are characterized by these features. Instead, "emotions enable social species to coordinate their behaviour, to respond to emergencies, to prioritise goals, to prepare for appropriate actions, and to make progress towards . . . even though individuals have only limited abilities to cogitate." According to LeDoux (1996, p. 176), if you were a small animal faced with a bobcat and "had to make a deliberate decision about what to do, you would have to consider the likelihood of each possible choice succeeding or failing and could get so bogged down in decision making that you would be eaten before you made the choice." Below, I cite a statement from Damasio (1994) to the same effect.

These authors argue that emotional responses enhance our capacity to make good decisions, not by guiding us to the best possible decision, but by ensuring that we make *some* decision in situations where procrastination is likely to be disastrous. The implicit premise of their reasoning, however, is that rationality amounts to what I have called elsewhere an *addiction to reason* (Elster 1989c, p. 117). Some people do indeed have a craving to make all decisions on the basis of "just" or sufficient reasons. That, however, makes them irrational rather than rational. A rational person would know that under certain conditions it is better to follow a simple mechanical decision rule than to use more elaborate procedures with higher opportunity costs.[4] In many cases, the organism might cope perfectly well by adopting and following mechanical decision rules, such as "when you hear a sound you cannot identify, stand still" or "when food tastes bitter, spit it out." In reality, of course, that's not how we cope with novelty or bitter-tasting food—not because the program is unfeasible but because natural selection has wired us differently. It is somewhat misleading, therefore, to assert that emotions are a "supplemental" principle that "fills the gap" between reflex-like behavior and fully rational action.[5]

We can take this argument one step further. If we do not and cannot respond to emergencies by following a mechanical decision rule, it may be because our cognitive faculties are temporarily clouded by the emotional arousal caused by the emergency. The emotion serves as *a functional equivalent for the rational faculties it suspends,* by inducing the very behavior that is rationally required and that reason, if left undisturbed, could have come up with by itself. The emotions do solve problems—but problems that are to some extent of their own making. The capacity for the emotions to supplement and enhance rationality would not exist if they did not also undermine it.

[4] Richard Thaler (1980) argues that neglect of opportunity costs and excessive focus on out-of-pocket expenses is a frequent source of cognitive irrationality. The neglect of the opportunity costs that are created by the fact that *decision making takes time* is also an important and pervasive source of irrationality.

[5] For such claims, see de Sousa (1987, p. 194), Johnson-Laird and Oatley (1992, p. 206). The point I am making here is well stated by LeDoux (1996, p. 175): "In responding first with its most-likely-to-succeed behavior, the brain buys time. This is not to say that the brain responds automatically for the purpose of buying time. The automatic responses came first, in the evolutionary sense, and cannot exist for the purpose of serving responses that came later."

4.2 *Damasio on Emotions and Choice*

In an independently developed argument for the rationality of the emotions, Damasio (1994) draws on findings from patients who as a result of damage in their frontal lobes become emotionally flat and lose their ability to make decisions, while retaining their cognitive powers. Patients who have suffered damage to their somatosensory cortices display similar symptoms, although in their case there is also severe cognitive malfunctioning. From his analysis of these patients, and drawing on general neurophysiological data, Damasio concludes that their defective decision making capacity is due to their lack of emotion.

The claim that the patients lack emotions has both inferential and evidential support. On the one hand, some of them engage in behavior that is strongly contrary to prevailing social norms. With respect to the nineteenth century patient in which the frontal lobe syndrom was first observed, Damasio (1994, p. 51) remarks that "We can infer at least that he lacked the feeling of embarrassment, given his use of foul language and his parading of self-misery." This inference from the patient's behavior is in accordance with the argument that social norms are sustained by the emotions of agents and observers rather than by material sanctions (see Section 5). On the other hand Damasio offers direct behavioral and physiological evidence that the brain-damaged patients are emotionally flat. They rarely, and then only within a limited repertoire, show signs of emotion. They can discuss their own tragic situation without appearing to be in the least affected by it. When confronted with disturbing pictures or when engaged in gambling experiments they do not have the skin conductance responses of normal individuals.

Damasio also offers behavioral evidence for the lack of decision-making rationality of his patients. They spend inordinate amounts of time on trivial tasks. Damasio (1994, p. 37) says about one of his patients that "the particular task . . . was actually being carried out *too* well, and at the expense of the overall purpose." About another of his patients he tells two strongly contrasting stories. On one day, his lack of "gut reactions" was highly advantageous when driving on an icy road, where most people tend to hit the brakes when they skid rather than gently pulling away from the tailspin. On the next day, he reports

> discussing with the same patient when his next visit to the laboratory should take place. I suggested two alternative dates, both in the coming month and just a few days apart from each other. The patient pulled out his appointment book and began consulting the calendar. . . . For the better part of a half-hour, the patient enumerated reasons for and against each of the two dates: previous engagements, proximity to other engagements, possible meteorological conditions, virtually anything that one could reasonably think about concerning a simple date. Just as calmly as he had driven over the ice, and recounted that episode, he was now walking us through a tiresome cost-benefit analysis, an endless outlining and fruitless comparison of options and possible consequences. [We] finally did tell him, quietly, that he should come on the second of the alternative dates. His response was equally calm and prompt. He simply said: "That's fine." (Damasio 1994, pp. 193–94)

In gambling experiments, the brain-damaged patients consistently did worse than others. (Here, the patients' failure was that they made *bad* decisions, not that they procrastinated.) The game required subjects to draw cards from one of four decks. Each time the subjects drew a card from decks *A* and *B* they

received a large sum of play money, and a smaller sum when they draw from decks *C* and *D*. When taking a card from *A* and *B*, they also sometimes had to pay back a very large amount of money. As they learn about the structure of the game, normal subjects mostly take cards from *C* and *D* and usually end up ahead. Brain-damaged subjects, by contrast, stick to decks *A* and *B* even though they regularly go bankrupt halfway through the game. Damasio's explanation is that these patients suffered from an inability to be motivated by mental representations of future states. Although they had normal skin conductance reactions to monetary loss, they differed from normal subjects in having no *anticipatory* responses in the period immediately preceding their selection of a card from a bad deck.[6]

Brain-damaged patients, then, tend to be emotionally flat and to have defective decision making capacities. It remains to characterize the relation between these two features. A strong claim is that "*Reduction in emotion may constitute an . . . important source of irrational behavior*" (Damasio 1994, p. 53: italics in original). A weaker claim, asserting correlation but not causation, is that "The powers of reason and the experience of emotion decline together" (Damasio 1994, p. 54).

To support the strong claim he first describes a decision-making problem that the owner of a business might confront, "faced with the prospect of meeting or not with a possible client who can bring valuable business but also happens to be the archenemy of your best friend, and proceeding or not with a particular deal. The brain of a normal, intelligent, and educated adult reacts to the situation by rapidly creating scenarios of possible response options *and* related outcomes" (Damasio 1994, p. 170). He then argues that (what he takes to be) the rational-choice approach to this problem would involve impossibly complex calculations. The decision would take an "inordinately long time" or might never be made at all. Because we are, as a matter of fact, able to make such decisions quite rapidly and efficiently, something else must be going on:

> Consider again the scenarios that I outlined. The key components unfold in our minds instantly, sketchily, and virtually simultaneously, too fast for the details to be clearly defined. But now imagine that *before* you apply any kind of cost/benefit analysis to the problem, something quite important happens: When the bad outcome connected with a given response option comes into mind, however fleetingly, you experience an unpleasant gut feeling. Because the feeling is about the body, I gave the phenomenon the technical term *somatic* state . . . ; and because it marks an image, I called it a *marker*.
>
> [The] somatic marker . . . forces attention on the negative outcome to which a given action may lead, and functions as an automated alarm signal which says: Beware of danger ahead if you choose the option which leads to this outcome. The signal may lead you to reject, *immediately*, the negative course of action and thus make you choose among other alternatives. The automated signal protects you against future losses, without further ado, and then allows you to choose from among fewer alternatives. There is still room for using a cost/benefit analysis and proper deductive competence, but only after the automated step drastically reduces the number of options.[7]

[6] In a recent experiment (Antoine Bechara et al. 1997) it is also shown that normal subjects "began to generate anticipatory skin conductance responses (SCRs) whenever they pondered a choice that turned out to be risky, before they knew explicitly that it was risky, whereas patients [with prefrontal damage] never developed anticipatory SCRs, although some eventually realized which choices were risky." In other words, conscious awareness of costs and benefits is neither a necessary nor a sufficient condition for rational choice.

[7] Damasio (1994, p. 173); italics in original. Elsewhere (pp. 175, 187) he also acknowledges positive somatic markers that lead to the pursuit of specific options rather than their elimination.

Once again, however, going by one's gut feelings is not the only way to cut through the maze of a complex decision-problem. One can also, for instance, flip a coin. Damasio might counter that this procedure is inferior to going by gut feelings, which enable one not only to make swifter decisions but also better ones. But the coin-tossing heuristic is only the most simple of many rules of thumb that are used in complex decision making problems. The general idea of satisficing (Simon 1955) can be spelled out in many ways (see for instance Richard Nelson and Winter 1982). Medical diagnosis and prognoses can be done very efficiently by mechanical point systems that rely on a small number of variables. In fact, such methods almost invariably tend to perform *better* than intuition based on "gut feeling" (Dawes, David Faust, and Paul Meehl 1989). In opposing gut feelings to hyperrational cost-benefit calculation Damasio is setting up a strawman.[8]

This objection does not, however, affect Damasio's claim that in most complex decisions people do, as a matter of fact, consult their gut feelings. When confronted with a novel challenge for which no rule of thumb is available, some people procrastinate more or less indefinitely, while others, for better or for worse, make a snap decision based on some salient feature of the situation. Damasio claims (i) that more often than not this feature has great predictive value for making a good choice or at least avoiding a bad one, and (ii) that its salience is signaled by an occurrent emotion. Concerning (i), he appeals to a regular reinforcement process, although he does not use that term. "Somatic markers are . . . emotions and feelings [which] have been connected, by learning, to predicted future outcomes of certain scenario" (Damasio 1994, p. 174; italics deleted). The basic principles of reinforcement theory, however, make it implausible that this mechanism could guide the decision whether to deal with a businessman who is the enemy of one's best friend. For reinforcement to establish behavior, it should ideally occur *soon* after the behavior in question, occur *invariably* when the behavior is chosen, and the behavior itself should be one that is chosen *frequently*. None of these conditions is even approximately satisfied in the example. Concerning (ii), Damasio (1994, p. 185) acknowledges that some somatic markers may operate unconsciously, as when "worker bumblebees 'decide' on which flowers they should land." In this case, no emotions are involved. He gives no evidence or argument to show that unemotional hunches could not be the rule in other cases too.

Damasio's correlational claim is arresting. His causal claim, however, seems unsupported. The mechanism he suggests—reinforcement learning—cannot perform the work it is supposed to do. There seems to be a cluster of abilities—to react emotionally, to delay gratification, and to avoid procrastination—that are linked in the brain, but it seems too early to tell whether the ability to have emotional reactions plays a direct causal role in sustaining the other abilities.

5. *Emotions and Interest*

From the point of view of economic theory, the most interesting issue concerning the emotions may be the nature of the interaction between emotion and other motivations. Among the latter, I shall only consider material self-interest ("interest" for short), although similar

[8] Moreover, as I argue in Section 5 below, there is no reason to believe that the emotionally induced curtailment of the perceived feasible set always has beneficial effects.

problems arise for the relation between emotions and impartial motivations. For instance, a wealthy liberal might on impartial grounds prefer to send his children to a public school, but his emotional attachment to the children might induce a preference for a better-quality private education.

5.1 *The Cost-benefit Model of Emotions*

By far the most common way of modeling the interaction between emotions and interests is to view the former as psychic costs or benefits that enter into the utility function on a par with satisfactions derived from material rewards. In this perspective, the only relevant aspect of the emotions is their *valence*. We may use Becker's analysis of beggar-induced guilt to illustrate two ways in which the pleasure and pain associated with the emotions may enter into the utility function. First, the guilt itself is a cost. Even if I do not have any money with me, I may cross the street to avoid coming face to face with a beggar whose visible misery would induce the unpleasant feeling of guilt. Second, the guilt may induce behavior that is costly in the material sense. If I do have money with me, I know that if I come face to face with the beggar I would give him something to alleviate my guilt. More accurately, I would give up to the point where the marginal utility of money in alleviating my guilt equals its marginal utility for other purposes. (If crossing the street is costly, this would also have to be taken into account.)

In other analyses, the encounters that trigger the emotion is taken for given and not subject to choice. The question of choice arises only because the agent has to weigh emotional satisfaction against other satisfactions, as in the choice of the amount to give to the beggar. In modeling envy, we may assume that the agent is willing to invest resources in making the rival worse off up to the point where he derives more utility from making himself better off (Hirshleifer 1987). In modeling altruism, we can make a similar assumption (Becker 1976, chs. 12 and 13). Economic analyses of regret (David Bell 1982; Graham Loomes and Robert Sugden 1982) also assume that agents weigh satisfaction from actual outcomes and emotions generated by counterfactual beliefs. Strictly speaking, none of these analyses need to rely on valence, in the sense of subjective feelings of pleasure and pain. All that is needed is that we can draw indifference curves that reflect the tradeoffs involved. We may think of emotional valence as the underlying mechanism behind these tradeoffs, but it need not be directly reflected in the formal analysis. In a modeling perspective, "emotional altruism" is indistinguishable from "reason-based altruism." In the following I assess the usefulness of this approach with respect to guilt, shame, envy, indignation, love, vindictiveness, hatred, and contempt.

5.2 *Guilt*

Let us assume that a person is tempted to steal a book from the library. If he feels guilty about doing it, he may abstain. If he steals the book and then feels guilt, he may return the book to the library. On the Becker-Frank assumption that guilt is to be modeled as a cost, both the abstention from stealing and the return of the book would be explained by a simple cost-benefit analysis. This approach has the great advantage that it allows us to account for the undeniable existence of a tradeoff between moral emotions and self-interest. The world is not made up of two exclusive and exhaustive categories, those who would steal a book whenever there was no risk of detection

and those who would never do so. Many people would go ahead and steal the book if but only if its value to them was sufficiently high or its value to others sufficiently small. To model such behavior, we could talk "as if" guilt and interest add up to an inclusive utility, with the marginal disutility from guilt being an increasing function of (say) the number of people on the waiting list for the book and the marginal utility from interest a decreasing function of (say) the time the agent expects to use the book.

Whether or not this model of the interaction between emotion and interest is predictively adequate, I submit that it is basically flawed. If guilt were nothing but an anticipated or experienced cost, an agent whose guilt deters him from stealing or retaining the book should be willing to buy a guilt-erasing pill if it was sufficiently cheap. *I submit that no person who is capable of being deterred by guilt would buy the pill.* In fact, he would feel guilty about buying it. For him, taking the pill in order to escape guilt and be able to steal the book would be as morally bad as just stealing it. He would not see any moral relevance between stealing the book in a two-step operation (taking the pill to steal the book) and stealing it in a one-step operation. There is a strict analogy between this argument and a point that I have made elsewhere (Elster 1997), viz. that a person who discounts the future very highly would not be motivated to buy a pill that would reduce his rate of time discounting. To want to be motivated by remote consequences of present behavior *is* to be motivated by remote consequences of present behavior. Similarly, to want to be immoral *is* to be immoral. A person willing to take the guilt-erasing pill would not need it.

We need, therefore, a model that can account for the tradeoff between guilt and interest and yet does not imply that a reluctant agent would buy the guilt-erasing pill. I conjecture that the model would involve some kind of non-intentional psychic causality rather than deliberate choice. To illustrate what I have in mind, I shall sketch a model drawn from catastrophe theory, along the lines of a model of the relation between personal opinion and conformism proposed by Abraham Tesser and John Achee (1994). In a catastrophe model, the surface describing the behavior of a dependent variable as a function of two independent variables folds in on itself in a cusp. Within a certain range, a given constellation of the independent variables is thus consistent with several values of the dependent variable.

Suppose that the agent is initially unwilling to steal the book, but that as its value to him increases he finally decides to do so.[9] Suppose conversely that the agent has stolen the book, but that as its value to others increases he finally returns it to the library. In the first case, suppose that its value to others is 10 and that he decides to steal it just when its value to him reaches 15. In the second case, suppose that its initial value to him is 15 and the initial value to others is 6. On the cost-benefit model, he would return it when its value to others reaches 10. On the catastrophe model, he might not do so until its value to others reached 15. The reason for this asymmetry is found in the mechanism of dissonance reduction (Leon Festin-

[9] Technically, the dependent value has to be continuous rather than the dichotomous choice between stealing the book and not stealing or returning it. We can assume, therefore, that the dependent variable is a propensity to steal the book and that the agent proceeds to steal it once the propensity reaches a certain level. Alternatively, we could use an example in which the choice variable is continuous, such as the amount to give to the beggar in the street.

ger 1957). An individual who is subject to several motivations that point in different directions will feel an unpleasant feeling of tension. When on balance he favors one action, he will try to reduce the tension by looking for cognitions that support it; when he favors another, he will look for cognitions which stack the balance of arguments in favor of that action (Tesser and Achee 1994, p. 104). Thus the timing of the switch in behavior will be path-dependent.

Dissonance theory is more realistic than the cost-benefit model in that it views individuals as making hard choices on the basis of *reasons* rather than on the basis of introspections about how they feel. Although the person who has stolen the book but feels guilty about it may try to alleviate his guilt, he would do so by coming up with additional reasons that justify his behavior rather than by accepting a guilt-erasing pill. It is a fundamental feature of human beings that they have an image of themselves as *acting for a reason*. Guilt, in this perspective, acts not as a cost but as a psychic force that induces the individual to rationalize his behavior. Beyond a certain point, when the arguments on the other side become too strong and the rationalization breaks down, a switch in behavior occurs. Although we may well say that the switch occurs when the guilt becomes unbearable, we should add that the point at which it becomes unbearable is itself influenced and in fact delayed by the guilt. This *dual role of emotions in decision making* is an important phenomenon to which I shall return.

As indicated, the "tension" in this example would be guilt if the person on balance preferred to steal the book, and perhaps regret if he preferred to abstain from stealing it. As psychologists have not considered emotions as sources of cognitive dissonance and of dissonance reduction, the argument involves an extension of dissonance theory as usually stated. Yet there seems to be no reason why emotions could not be sources of dissonance. Although it is descriptively accurate that dissonance theory places the "emphasis on the individual's concept of *what he is* rather than his concept of *what he should be*" (Festinger and Dana Bramel 1962, p. 271), this limitation on the scope of the theory seems arbitrary. As economists are now incorporating dissonance theory into their framework (George Akerlof and William Dickens 1982; Rabin 1994), the incorporation of guilt and other self-evaluative emotions (E. Tory Higgins 1987) into dissonance theory would also lead to their incorporation in economics.

5.3 *Shame*

An analysis of shame will allow me to suggest further alternatives to the simple cost-benefit model. Empirically, we know that people can take extreme actions when targeted by social ostracism. The case of the Navy Admiral who killed himself when it was shown that he was not entitled to decorations he was wearing (Peter Boyer 1996) is one example. The five Frenchmen who killed themselves in June 1997 after they had been caught in a crackdown on pedophilia is another. The two explanatory issues that arise are, first, whether the decisive factor was fear of material sanctions or rather an emotion of shame; and, second, assuming it was shame, whether it can simply be modeled as a cost.

In these dramatic cases few would dispute that the emotion of shame must have been a decisive factor. It is not generally accepted, however, that social norms in general operate through the emotion of shame. Many writers (Aker-

lof 1976; Robert Axelrod 1986; Didier Abreu 1988; James Coleman 1990) have argued that social norms work through material sanctions, involving higher-order sanctions of those who fail to sanction norm-violators or non-sanctioners. I shall not repeat the arguments I have offered against this view elsewhere (Elster 1989b, 1989d), except to note that they rest on an empirical claim that the willingness to impose sanctions goes quickly to zero as we go upwards in the hierarchy of sanctionings.[10]

I would like to go beyond my earlier arguments, however, to assert that the material sanctions themselves are best understood as vehicles of the emotion of contempt, which is the direct trigger of shame. When a person refuses to deal with someone who has violated a social norm, the latter may suffer a financial loss. More important, he will see the sanction as a vehicle for the emotions of contempt or disgust, and suffer shame as a result. The material aspect of the sanction that matters is *how much it costs the sanctioner to penalize* the target, not how much it costs the target to be penalized. (Thus the phrase "This hurts me more than it hurts you" may be intended to add to the punishment, not to soften it.) The more it costs the sanctioner to refuse to deal with the target person, the stronger will the latter feel the contempt behind the refusal and the more acute will be his shame. Although high costs to the sanctioner often go together with high costs for the target, as when the sanctioner renounces on the opportunity for a mutually profitable business transaction, this need not be the case; and even when it is the case, my claim is that the costs to the sanctioner are what makes the sanction really painful to the target. It tells him that others see him as so bad that they are willing to forego valuable opportunities rather than have to deal with him.

The second question concerns the mode of operation of shame in shaping behavior. According to the cost model, present and future shame enters into the utility function on a par with material costs and benefits. A person who has been publicly exposed to contempt might compare three options: suicide, moving elsewhere to take up a new profession with a new name, and sticking it out in the expectation that the contempt of others and the feeling of shame will fade after a while. If the immediate feeling of shame is immense, suicide might well be preferable to the discounted present value of the other options. It would be hard to refute this account, as the disutility of shame can always be stipulated to be arbitrarily high. I believe it is at least equally plausible, however, to assume that shame induces a temporary heightening of the discounting rate. With respect to drugs, Becker (1996, p. 329) argues that "A habit may be raised into an addiction by exposure to the habit itself. Certain habits, like drug use and heavy drinking, may reduce the attention to future consequences—there is no reason to assume discount rates on the future are just given and fixed." The argument seems equally applicable to strong emotions. Alternatively, we might follow Loewenstein (1996) and argue that shame, like other visceral factors, undermines our ability to predict future subjective states. When one is in intense pain or suffering

[10] Eugene Kandel and Edward Lazear (1992, p. 813) try to deal with this problem by arguing that "the firm can be thought of as a circle. As long as a worker is told only that he is to punish the neighbor on his right or suffer punishment from the one on his left, he will carry out the punishment." I fail to see what this means or how it solves the difficulty.

from intense shame, it is hard to imagine that the state will not last forever.[11] The overwhelming desire is for immediate release. By continuity, a shame of less intense strength will also have a causal effect on the evaluation and perception of other rewards *over and above its own role as a (negative) reward*. This is another instance of the dual role of emotion in decision making.

5.4 *Envy, Indignation, and the Ultimatum Game*

The emotions of envy and indignation can easily be modeled as costs in the context of the Ultimatum Game (Werner Güth, Rolf Schmittberger, and Bernd Schwartz 1982; see also Alvin Roth 1995 for a survey).

The game is shown in Figure 2. The reader should disregard the middle branch of the tree for the time being. In this form, the game has player I propose a division of ten dollars (no fractional amounts allowed) between himself and player II, x for the other and $10\text{-}x$ for himself. Player II can either accept the offer, in which case both get what player I proposed, or reject it, in which case neither gets anything. If

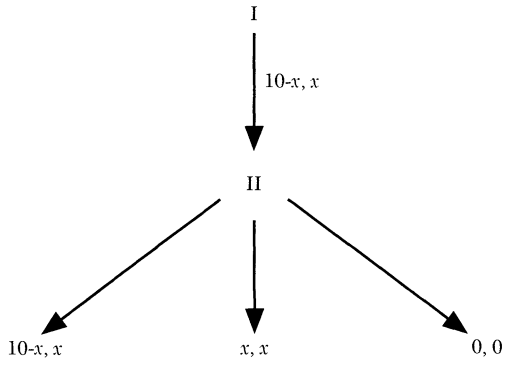

Figure 2.

both players are motivated by material self-interest and know themselves to be so motivated, the first player will propose nine dollars for himself and one dollar for the second, and the second will accept the offer, on the principle that something is better than nothing. Yet in numerous experiments with this game it is invariably found that people in the first position typically offer something like a seven-three split, and that those in the second position typically reject offers of two or less. Obviously something beyond mere self-interest is motivating the players—but what?

As the two players typically communicate only through computer terminals in one-shot games, we can exclude interpretations in terms of shame or reputation-building. In early studies of the Ultimatum Game it was often argued that the players deviate from self-interest because they are motivated by fairness or a sense of justice. Later experiments have largely ruled out this explanation. In the Dictator Game, where the second player has no choice at all, the first player is usually less generous (Roth 1995, p. 270). Rather, what explains the generosity of the first player is his anticipation that the second player will prefer to take nothing

[11] An analogy of suicide from shame is in fact the person who asks for assistance in killing himself because he cannot live with the pain. Here, too, there are three theoretical possibilities to explain the behavior. (i) The person is making a rational choice among options discounted to present value at his usual rate of discounting. (ii) He is choosing among the same options but discounted by a higher rate induced by the pain. (iii) He is choosing among cognitively distorted images of the same options: rather than discounting future states at a higher rate, he sees them as worse than he would do if he were assessing the prospect of another similarly placed person. Although once again it would be hard to offer a direct refutation of (i), there is considerable indirect evidence for the mechanisms underlying (ii) and (iii). As is implicit in the passage from Becker (1996, p. 329) cited in the text, a similar argument could be made about the craving for addictive substances (see also Claude Steele and Robert Josephs 1990).

rather than accept a small amount. We can imagine two emotional reactions that explain why the second player would react in this way: envy and indignation. If the second player is motivated by envy, it can be modeled as a cost which has to be subtracted from what the first player offers him. If the net result is negative, he will reject the offer. If he is motivated by indignation, his rejection of a bad offer will give him the pleasure of revenge. If this pleasure is large enough, it may offset the material loss involved in rejection.

I want to make two remarks on these interpretations of the Ultimatum Game behavior. First, I shall argue that envy is more plausibly interpreted as an action tendency than as a cost. Second, I shall suggest that envy and indignation are not necessarily incompatible motivations. Rather, a subjective feeling of indignation may be a form of envy in disguise. Both remarks are somewhat speculative, but I believe they capture some of the dynamics of the emotions that is not reflected in the simple cost-benefit model.

Pre-scientific and literary writings on envy are in unanimous agreement on one point: the envy man is not made happy by carrying out his urge to destroy the envied object or its possessor (for surveys, see Helmut Schoeck 1987 and Gonzalo Fernandez de la Mora 1987). Whereas implementation of the action tendency of guilt does alleviate the emotion and render the agent better off, implementing the action tendency of envy makes the agent worse off. The cost-benefit model of envy cannot capture this feature of the emotion. To suggest an explanation, let me first distinguish among three states of the world:

(A) The status quo

(B) The state of the world in which my rival is made worse off, but not as the result of my action

(C) The state of the world in which my rival is made worse off, as the result of my action

The key to my account is the assumption that most envious people prefer (B) over (A) and (A) over (C). We would like our rival to be made worse off, but because of the shame attached to destruction from envy we do not want to serve as the agent of his destruction. (See Hirshleifer, 1987, for a similar distinction between action-dependent and action-independent emotions.) This doesn't mean that we don't have the urge to destroy, only that we don't want to act on it. When people act on the urge, it is because in their keen desire for the other's misfortune they confuse (B) and (C). They fail to see, that is, that they cannot intentionally bring about a state that is defined by not being brought about intentionally by themselves (Elster 1983b, ch. II).[12] Once the deed is done, they discover that they are worse off rather than better. Again, emotion has a dual role. While inducing action to alleviate the negative emotion of envy, it prevents us from thinking clearly about the consequences of such action.

To feel envious is to feel inferior. Nobody likes to feel inferior, especially when there is nobody else to blame. To alleviate the feeling of inferiority, people often rewrite the script so as to be able to blame someone else for their situation or to explain the superiority of the other by his immoral

[12] There is an obvious similarity between this argument and the argument I adduced above against the idea of inducing or inculcating shame and guilt. Yet whereas the intention to bring about state (B) is *logically* incoherent, the intention to induce shame or guilt is incoherent only because people as a matter of fact feel anger when manipulated.

behavior.[13] By this dissonance reduction mechanism, the horrible feeling of envious inferiority can be transmuted into the wonderful feeling of righteous indignation (Elster, forthcoming, ch. V). Alexis de Tocqueville (1969, p. 221) wrote for instance that "private citizens see men rising from their ranks and attaining wealth and power in a few years; that spectacle excites their astonishment and their envy; they wonder how he who was their equal yesterday has today won the right to command them. To attribute his rise to his talents or his virtues is inconvenient, for it means admitting that they are less virtuous or capable than he. They therefore regard some of his vices as the main cause thereof."

We can use the Ultimatum Game as shown in Figure 2 to explore how the dynamics of transmutation could be explored experimentally. We now consider an extra option for player II, in which he can choose to give both himself and player I the amount x which player I proposed to give him. (The necessary assumption that $x \leq 5$ will typically be fulfilled.) If subjects in position II chose (0,0) rather than (x,x) in retaliation against a low proposal, it would be inconsistent with envy as a conscious motivation, but consistent with the idea that an initial envy is suppressed and replaced by righteous indignation. This choice would also be consistent, however, with the idea that player II was motivated by righteous indignation from the beginning and simply wanted to punish I severely for his unfair proposal. To assess this idea, one could tell player I that the game structure is as in Figure minus the middle branch, and player II that it is as in Figure 2 minus the left branch but that player I believes it is as in Figure 2 minus the middle branch. If player II is genuinely motivated by righteous indignation, we should expect him to choose (0,0) rather than (x,x), *because this is the only way he can punish player I*. (I assume that what matters for II is the actual punishment of I by reducing his payoff below what it would otherwise have been, rather than acting in a way that leads I to believe he has been punished.) If instead we find player II tending to choose (x,x), the original motivation is more likely to be envy. By experimenting with variations on this set up, one might be able to assess the three competing hypotheses of what motivates the typical player II in the Ultimatum Game: plain envy, plain indignation, or envy transmuted into indignation.

5.5 *Love, Revenge, Contempt, and Hatred*

Some of the remarks I made about shame and guilt suggest that emotions could be modeled as *temporary preferences*. The person who sees a beggar in the street and feels an urge to give him money, or the person who is in the grip of shame and feels an urge to kill himself, may be viewed as undergoing a short-term change of preferences. It is in fact an important feature of many occurrent emotions that they have a relatively short duration. Anger, for instance, tends to "spend itself" quickly (Frijda 1986, p. 43). Aristotle comments that "men become calm when they have spent their anger on someone else. This happened in the case of Ergophilus: though the people were more irritated against him than against Callisthenes, they acquitted him because they had condemned Callisthenes to death the

[13] Alternatively, the rewriting might be triggered by the meta-emotion of shame. If people are ashamed of their envy, this might set up a pressure to rewrite the script. In many cases, the first-order pain of inferiority that is constitutive of envy and the second-order pain of shame might act in concert to reinforce the pressure.

day before" (*Rhetoric* 1380[b] 11–13). In trials of collaborators in German-occupied countries after World War II, those who were tried later generally received milder sentences even when the crimes were similar.

Yet some emotions have a more durable character. In Becker's analysis of love, the reason why the prudent man would take care to avoid low-income women is presumably that he might contract a lifelong disposition to share his income. One might question, perhaps, whether the relationship between spouses typically involves emotions in the full sense of the term. Marital love may involve concern for the welfare of one's spouse, but not the strong arousal and action tendencies that we associate with the emotion often referred to as infatuation. That term is somewhat unfortunate, however, to the extent that it suggests an acute rather than a durable state. The characteristic features of infatuation—all-consuming interest in the other person, heightened energy levels, less need for sleep and food—can in fact endure for years. In a study of this emotion, for which she coined the term "limerence," Dorothy Tennov (1979) found that the typical duration of an episode was from 18 months to three years, with some episodes lasting only a few weeks and others a whole lifetime.

Revenge behavior provides another counterexample to the idea that emotions can be modeled as momentary preferences. In societies where blood feuds are common, revenge can be a lifetime obsession. In his outstanding study of blood feuds in nineteenth century Corsica, Stephen Wilson (1988, pp. 30, 280) refers to one case in which a man killed six persons who had testified in the trial of his brother, and to another in which a man killed all 14 witnesses who had testified against his brother. Other studies of feuding (Milovan Djilas 1958; Miller 1990) confirm the view that the passion for revenge or "wrath" (Frijda 1994) can be a lifetime concern. Unlike love or limerence, however, the durable thirst for revenge is not a universal phenomenon. The spontaneous urge to retaliate may be universal, but its transformation into a lifelong passion occurs only in societies where it is amplified by strong social norms.

What one might call the "prejudice emotions," contempt and hatred, also tend to be very durable and frequently all-consuming. Unlike most other emotions, these are not necessarily triggered by a particular event or episode. The members of one social group may harbor these feelings toward members of another group simply on the basis of (what they take to be) their *character* rather than on the basis of anything they have done. In the case of contempt, the others are viewed as intrinsically inferior; in the case of hatred, as intrinsically evil. Thus followers of Hitler thought Jews evil but Slavs inferior (Daniel Goldhagen 1996, p. 469). As Aristotle noted, the action tendency of hatred is to destroy the person who is the target of the emotion, whereas that of anger is to make him suffer (*Rhetoric* 1382[a] 2–16).[14] Not all prejudices are all-consuming. In fact, the phenomenon of "prejudice with compunction" (Gordon Allport 1979, ch. 20) shows that the prejudiced individual need not endorse his own attitude, and rather have a meta-emotion of shame that prevents

[14] Similarly (see note 2 above), the guilty person may want to make himself suffer, whereas the person who is ashamed may want to destroy himself. Yet the analogy is not perfect. The normal action tendency of guilt is to try to undo the harm one has caused. Although the undoing may be costly and to that extent involve suffering, it is only in the special case of neurotic guilt (Otto Fenichel 1945, p. 105) that the need to suffer is the primary urge.

him from acting on it. Yet as the twentieth century has abundantly shown, prejudice can become all-consuming.

These "standing" emotions shape preferences in a durable manner. When they are all-consuming, we can model them by a lexicographic preference ordering. For the person who is in a state of limerence or in pursuit of revenge, there is no tradeoff between satisfaction of the emotion and material interest. Ordinary economic activities are pursued only to the extent that they promote the emotional goal of the agent. Unlike the person who is in the grip of an acute emotion of shame or anger, people who are subject to an all-consuming durable passion are perfectly capable of acting in an instrumentally rational fashion. As Aristotle noted (*Politics* 1312^{b} 19–34), the angry man is irrational whereas the man animated by hatred is not. The emotion may be grounded in an irrational belief, but that is another matter.

6. *Conclusion*

It is not possible in the short format of an article to bring out all the features of emotion that might be relevant for economists. Any survey has to be selective, and I have chosen to exclude some topics that may be of interest to many readers. In particular, I have said very little about the evolutionary models that have gained prominence through the writings of Hirshleifer (1987) and Frank (1988). They argue, to simplify, that the emotionally induced disregard for consequences can have good consequences. Threats and promises that would not have been credible if made by an agent (known to be) motivated by pure material self-interest, can be credible if made by an agent (known to be) willing to disregard his material self-interest. They conjecture, therefore, that emotional dispositions such as envy and indignation may have been selected because of their survival value.

In my opinion, these attempts are premature. I think we need a better understanding of how emotions actually influence behavior before we can begin to think about how they may have evolved. Until we know whether the *net* effect of an emotional disposition is positive or negative, it makes no sense to begin looking for an evolutionary explanation.[15] In the case of anger, for instance, it may be true that irascible people often get their way, but that is only part of the story. Others will learn to recognize them as irascible, and walk around them rather than have any dealings with them. Sometimes one has no choice, but often one can find alternative and more reasonable partners. Irascible people will find themselves shunned, which detracts from opportunities for mutually favorable interactions with others. They may gain more in each interaction, but interact more rarely. They will not, moreover, be able to learn that their emotional disposition works against them, and hence will have no incentive to control themselves. They will get positive reinforcement from their encounters with others—they find that being angry works!—but they cannot get feedback from the encounters they fail to have. I am not saying that the net effect of irascibility is negative, only that one cannot show it to be positive simply by citing a positive impact in isolation from other effects.

[15] Strictly speaking, this is not true. Even if a given emotional disposition is on the whole negative in its impact on reproductive fitness, we might still be able to explain it as a suboptimal part of an optimal package solution that has been selected by evolution. Yet whereas this would require detailed knowledge about genetic linkages, the demonstration that the disposition has a positive net effect would by itself go a long way towards explaining why it exists.

The more urgent task is to understand how emotions interact with other motivations to produce behavior. I have tried to argue that the most obvious strategies—modeling emotions as psychic costs and benefits or as a source of preferences—miss important features of the phenomenon. The role of emotions cannot be reduced to that of shaping the reward parameters for rational choice. It seems very likely that they also affect the ability to make rational choices within those parameters. This *dual role of the emotions*—shaping choices as well as rewards—has analogues in pain, addictive cravings, and other visceral factors. As in these other cases, the claim is not that the emotions fully determine choice, or that there is no tradeoff between emotional rewards and other rewards. Rather, it is that the tradeoff itself is modified by one of the rewards that is being traded off against the others.

REFERENCES

ABREU, DIDIER. "On the Theory of Infinitely Repeated Games with Discounting," *Econometrica*, Mar. 1988, *56*(2), pp. 383–96.

AKERLOF, GEORGE. "The Economics of Caste of the Rat Race and Other Woeful Tales," *Quart. J. Econ.*, Nov. 1976, *90*(4), pp. 599–617.

AKERLOF, GEORGE A. AND DICKENS, WILLIAM T. "The Economic Consequences of Cognitive Dissonance," *Amer. Econ. Rev.*, June 1982, *72*(3), pp. 307–19.

ALLPORT, GORDON. *The nature of prejudice*. Reading, MA: Addison-Wesley, [1954] 1979.

AXELROD, ROBERT. "An Evolutionary Approach to Norms," *Amer. Polit. Sci. Rev.*, Dec. 1986, *80*(4), pp. 1095–1111.

BARON, JONATHAN. *Thinking and deciding*. 2nd ed. Cambridge: Cambridge U. Press, 1994.

BECHARA, ANTOINE ET AL. "Deciding Advantageously Before Knowing the Advantageous Strategy," *Science*, Feb. 28, 1997, *275*, pp. 1293–95.

BECKER, GARY S. *The economic approach to human behavior*. Chicago: U. of Chicago Press, 1976.

———. *Accounting for tastes*. Cambridge, MA: Harvard U. Press, 1996.

BELL, DAVID. "Regret in Decision Making Under Uncertainty," *Operations Research*, Sept./Oct. 1982, *30*(5), pp. 961–81.

BOYER, PETER. "Admiral Boorda's War," *The New Yorker*, Sept. 16, 1996.

COLEMAN, JAMES S. *Foundations of social theory*. Cambridge, MA: Harvard U. Press., 1990.

DAMASIO, ANTONIO R., *Descartes' error*. New York: Putnam, 1994.

DAWES, ROBYN M. *House of cards*. New York: Free Press, 1994.

DAWES, ROBYN; FAUST, DAVID AND MEEHL, PAUL E. "Clinical Versus Actuarial Judgment," *Science*, Mar. 1989, *243*, pp. 1668–74.

DIXON, NORMAN F. *On the psychology of military incompetence*. London: Futura, 1976.

DJILAS, MILOVAN. *Land without justice*. London: Methuen, 1958.

EKMAN, PAUL. *Telling lies*. New York: Norton, 1992.

EKMAN, PAUL AND DAVIDSON, RICHARD J. *The nature of emotion*. Oxford U. Press, 1994.

ELSTER, JON. *Explaining technical change*. Cambridge: Cambridge U. Press, 1983a.

———. *Sour grapes*. Cambridge: Cambridge U. Press, 1983b.

———. *Nuts and bolts for the social sciences*. Cambridge: Cambridge U. Press, 1989a.

———. *The cement of society*. Cambridge: Cambridge U. Press, 1989b.

———. *Solomonic judgements*. Cambridge: Cambridge U. Press. 1989c.

———. "Social Norms and Economic Theory," *J. Econ. Perspectives*, Fall 1989d, *3*(4), pp. 99–117.

———. Review of Becker (1996), *U. of Chicago Law Rev.*, 1997, *64*, pp. 749–64.

———. *Alchemies of the mind*. Forthcoming

FEARON, JAMES D. AND LAITIN, DAVID D. "Explaining Interethnic Cooperation," *Amer. Polit. Sci. Rev.*, Dec. 1996, *90*(4), pp. 715–35.

FENICHEL, OTTO. *The psychoanalytical theory of neurosis*. New York: Norton, 1945.

FERNANDEZ DE AL MORA, GONZALO F. *Egalitarian envy*. New York: Paragon House Publishers, 1987.

FESTINGER, LEON. *A theory of cognitive dissonance*. Stanford, CA: Stanford U. Press, 1957.

FESTINGER, LEON AND BRAMEL, DANA. "The Reactions of Humans to Cognitive Dissonance," in *Experimental foundations of clinical psychology*. Ed.: ARTHUR J. BACHRACH. New York: Basic Books, 1962, pp. 254–79.

FRANK, ROBERT H. *Passions within reason*. New York: Norton,1988.

FRIJDA, NICO H. *The emotions*. Cambridge: Cambridge U. Press, 1986.

———. "The Lex Talionis: On Vengeance," in *Emotions: Essays on emotion theory*. Eds.: STEPHANIE H. M. VAN GOOZEN, NANNE E. VAN DE POLL, AND JOE A. SERGEANT. Hillsdale, NJ: Lawrence Erlbaum, 1994, pp. 263–90.

GOLDHAGEN, DANIEL J. *Hitler's willing executioners*. New York: Knopf, 1996.

GORDON, ROBERT M. *The structure of emotions*. Cambridge: Cambridge U. Press, 1987.

GÜTH, WERNER; SCHMITTBERGER, ROLF AND SCHWARZE, BERND. "An Experimental Analysis of Ultimatum Bargaining," *J. Econ. Behav. Organ.*, Dec. 1982, *3*(4), pp. 367–88.

HATFIELD, ELAINE; CACIOPPO, JOHN T. AND RAPSON, RICHARD L. *Emotional contagion*. Cambridge: Cambridge U. Press, 1994.

HIGGINS, E. TORY. "Self-discrepancy: A Theory Relating Self and Affect," *Psychological Review*, July 1987, *94*(3), pp. 319–40.

HIRSHLEIFER, JACK. "On the Emotions as Guarantors of Threats and Promises," in *The latest on the best*. Ed.: JOHN DUPRÉ. Cambridge, MA: MIT Press, 1987, pp. 307–26.

HOCHSCHILD, ARLIE R. *The managed heart*. Berkeley: U. of California Press, 1983.

ISAACSON, WALTER. *Kissinger*. New York: Simon & Schuster, 1993.

ISEN, ALICE. "Positive Affect and Decision Making," in MICHAEL LEWIS AND JEANNETTE M. HAVILAND, eds., 1993, pp. 261–78.

JOHNSON-LAIRD, PHILIP N. AND OATLEY, KEITH. "Basic Emotions, Rationality, and Folk Theory," *Cognition and Emotion*, May-July 1992, *6*(3–4), pp. 201–23.

KANDEL, EUGENE AND LAZEAR, EDWARD P. "Peer Pressure and Partnerships," *J. Polit. Econ.*, Aug. 1992, *100*(4), pp. 801–17.

KREPS, DAVID M. ET AL. "Rational Cooperation in the Finitely Repeated Prisoner's Dilemma," *J. Econ. Theory*, Aug. 1982, 27(2), pp. 245–52.

LEDOUX, JOSEPH E. "In Search of an Emotional System in the Brain," in *The cognitive neurosciences*, Ed.: MICHAEL S. GAZZANIGA. Cambridge, MA: MIT Press, 1995, pp. 1049–61.

———. *The emotional brain*. New York: Simon & Schuster, 1996.

LEVENSON, ROBERT W. "Autonomic Nervous System Differences among Emotions," *Psychological Science*, 1992, *3*, pp. 23–27.

LEVY, ROBERT I. *The Tahitians*. Chicago: U. of Chicago Press, 1973.

LEWIS, CLIVE S. *The allegory of love*. London: Oxford U. Press, 1936.

LEWIS, MICHAEL. *Shame*. New York: Free Press, 1992.

LEWIS, MICHAEL AND HAVILAND, JEANETTE M., eds. *Handbook of emotions*. New York: Guilford Press, 1993.

LOEWENSTEIN, GEORGE. "Out of Control: Visceral Influences on Behavior," *Organizational Behavior & Human Decision Processes*, Mar. 1996, *65*,(3) pp. 272–92.

LOOMES, GRAHAM AND SUGDEN, ROBERT. "Regret Theory: An Alternative Theory of Rational Choice under Uncertainty," *Econ. J.*, Dec. 1982, *92*(368), pp. 805–24.

MILLER, WILLIAM I. *Bloodtaking and peacemaking*. Chicago: U. of Chicago Press, 1990.

———. *Humiliation*. Ithaca, N.Y.: Cornell U. Press, 1993.

DE MONTAIGNE, MICHEL. *Essays*. Trans. by M. A. SCREECH. London: Penguin Books, 1991.

NELSON, RICHARD R. AND WINTER, SIDNEY G. *An evolutionary theory of economic change*. Cambridge, MA: Harvard U. Press, 1982.

PERELMAN, CHAIM AND OLBRECHTS-TYTECA, LUCIE. *The new rhetoric*. Notre Dame, IN: U. of Notre Dame Press, 1969.

RABIN, MATTHEW. "Incorporating Fairness into Game Theory and Economics," *Amer. Econ. Rev.*, Dec. 1993, *83*(5), pp. 1281–1302.

———. "Cognitive Dissonance and Social Change," *J. Econ. Behav. Organ.*, Mar. 1994, 23(2), pp. 177–94.

———. "Psychology and Economics," *J. Econ. Lit.*, Mar. 1998, *36*(1), pp. 11–46.

RORTY, AMÉLIE. "Agent Regret," in *Explaining emotions*. Ed.: AMÉLIE RORTY. Berkeley: U. of California Press, 1980, pp. 489–506.

ROTH, ALVIN E. "Bargaining Experiments," in *Handbook of experimental economics*. Eds.: JOHN H. KAGEL AND ALVIN E. ROTH. Princeton U. Press, 1995, pp. 253–348.

SARTRE, JEAN-PAUL. *Esquisse d'une théorie des émotions*. Paris: Hermann, 1936.

SCHAFER, ROY. *A new language for psychoanalysis*. New Haven: Yale U. Press, 1976.

SCHOECK, HELMUT. *Envy*. Indianapolis: Liberty Press, 1987.

SHWEDER, RICHARD A AND LEVINE, ROBERT A., eds. *Culture theory: Essays on mind, self, and emotion*. Cambridge: Cambridge U. Press, 1984.

SIMON, HERBERT. "A Behavioral Theory of Rational Choice," *Quart. J. Econ.*, Feb. 1955, *69*, pp. 99–118.

SOLOMON, ROBERT C. *The passions*. Indianapolis: Hackett, 1993.

DE SOUSA, RONALD. *The rationality of emotion*. Cambridge, MA: MIT Press, 1987.

SPACKS, PATRICIA M. *Boredom*. Chicago: U. of Chicago Press, 1995.

STEELE, CLAUDE M. AND JOSEPHS, ROBERT A. "Alcohol Myopia: Its Prized and Dangerous Effects," *American Psychologist*. Aug. 1990, *45*(8), pp. 921–33.

TENNOV, DOROTHY. *Love and limerence*. New York: Stein and Day, 1979.

TESSER, ABRAHAM AND ASCHEE, JOHN. "Aggression, Love, Conformity, and Other Social Psychological Catastrophes," in *Dynamical systems in social psychology*. Eds.: ROBIN R. VALLACHER AND ANDRZEJ NOWAK. New York: Academic Press, 1994, pp. 96–109.

THALER, RICHARD. "Toward a Positive Theory of Consumer Choice," *J. Econ. Behav. Organ.*, Mar. 1980, *1*(1), pp. 39–60.

DE TOCQUEVILLE, ALEXIS. *Democracy in America*. New York: Anchor Books, [1835] 1969.

WILLIAMS, BERNARD A. O. *Shame and necessity*. Berkeley: U. of California Press, 1993.

WILSON, STEPHEN. *Feuding, conflict, and banditry in nineteenth-century Corsica*. Cambridge: Cambridge U. Press, 1988.

WINTER, SIDNEY G., JR. "Economic 'Natural Selection' and the Theory of the Firm," *Yale Econ. Essays*, 1964, *4*(1), pp. 225–72.

[Footnotes]

[6] **Deciding Advantageously Before Knowing the Advantageous Strategy**
Antoine Bechara; Hanna Damasio; Daniel Tranel; Antonio R. Damasio
Science, New Series, Vol. 275, No. 5304. (Feb. 28, 1997), pp. 1293-1295.
Stable URL:
http://links.jstor.org/sici?sici=0036-8075%2819970228%293%3A275%3A5304%3C1293%3ADABKTA%3E2.0.CO%3B2-U

[10] **Peer Pressure and Partnerships**
Eugene Kandel; Edward P. Lazear
The Journal of Political Economy, Vol. 100, No. 4. (Aug., 1992), pp. 801-817.
Stable URL:
http://links.jstor.org/sici?sici=0022-3808%28199208%29100%3A4%3C801%3APPAP%3E2.0.CO%3B2-K

References

On the Theory of Infinitely Repeated Games with Discounting
Dilip Abreu
Econometrica, Vol. 56, No. 2. (Mar., 1988), pp. 383-396.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28198803%2956%3A2%3C383%3AOTTOIR%3E2.0.CO%3B2-B

LINKED CITATIONS

The Economic Consequences of Cognitive Dissonance
George A. Akerlof; William T. Dickens
The American Economic Review, Vol. 72, No. 3. (Jun., 1982), pp. 307-319.
Stable URL:
http://links.jstor.org/sici?sici=0002-8282%28198206%2972%3A3%3C307%3ATECOCD%3E2.0.CO%3B2-2

Deciding Advantageously Before Knowing the Advantageous Strategy
Antoine Bechara; Hanna Damasio; Daniel Tranel; Antonio R. Damasio
Science, New Series, Vol. 275, No. 5304. (Feb. 28, 1997), pp. 1293-1295.
Stable URL:
http://links.jstor.org/sici?sici=0036-8075%2819970228%293%3A275%3A5304%3C1293%3ADABKTA%3E2.0.CO%3B2-U

Regret in Decision Making under Uncertainty
David E. Bell
Operations Research, Vol. 30, No. 5. (Sep. - Oct., 1982), pp. 961-981.
Stable URL:
http://links.jstor.org/sici?sici=0030-364X%28198209%2F10%2930%3A5%3C961%3ARIDMUU%3E2.0.CO%3B2-A

Clinical Versus Actuarial Judgment
Robyn M. Dawes; David Faust; Paul E. Meehl
Science, New Series, Vol. 243, No. 4899. (Mar. 31, 1989), pp. 1668-1674.
Stable URL:
http://links.jstor.org/sici?sici=0036-8075%2819890331%293%3A243%3A4899%3C1668%3ACVAJ%3E2.0.CO%3B2-8

Peer Pressure and Partnerships
Eugene Kandel; Edward P. Lazear
The Journal of Political Economy, Vol. 100, No. 4. (Aug., 1992), pp. 801-817.
Stable URL:
http://links.jstor.org/sici?sici=0022-3808%28199208%29100%3A4%3C801%3APPAP%3E2.0.CO%3B2-K

Regret Theory: An Alternative Theory of Rational Choice Under Uncertainty
Graham Loomes; Robert Sugden
The Economic Journal, Vol. 92, No. 368. (Dec., 1982), pp. 805-824.
Stable URL:
http://links.jstor.org/sici?sici=0013-0133%28198212%2992%3A368%3C805%3ARTAATO%3E2.0.CO%3B2-1

LINKED CITATIONS

Incorporating Fairness into Game Theory and Economics
Matthew Rabin
The American Economic Review, Vol. 83, No. 5. (Dec., 1993), pp. 1281-1302.
Stable URL:
http://links.jstor.org/sici?sici=0002-8282%28199312%2983%3A5%3C1281%3AIFIGTA%3E2.0.CO%3B2-X

Psychology and Economics
Matthew Rabin
Journal of Economic Literature, Vol. 36, No. 1. (Mar., 1998), pp. 11-46.
Stable URL:
http://links.jstor.org/sici?sici=0022-0515%28199803%2936%3A1%3C11%3APAE%3E2.0.CO%3B2-B