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The Strategy of Affect: Emotions in Human Cooperation

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1 **ABSTRACT**

2 Emotions appear to be a key determinant of behavior in cooperative relationships. Emotions
3 affect behavior both directly, by motivating action, and indirectly, as actors anticipate others'
4 emotional responses. The influence of emotions is understandable once it is recognized that a)
5 the ability to benefit from cooperative relationships has been a key determinant of biological
6 fitness throughout our species' history, and b) panhuman emotions are adaptations crafted by
7 natural selection. Different emotions affect cooperative behavior in different ways – some
8 emotions lead actors to forego the temptation to defect, some lead them to reciprocate harm
9 suffered or benefits provided, and some lead them to repair damaged relationships. An important
10 class of emotions influences cooperative behavior in part by motivating conformity to norms
11 and/or punishment of norm violators. This paper discusses thirteen emotions that seem to have
12 the greatest impact on cooperation. In addition to reviewing empirical evidence of the role of
13 emotions in cooperation, the paper presents a variety of explanatory hypotheses, and provides a
14 number of discrete testable predictions.

15

16 *Keywords: emotions, cooperation, evolution, conformity*

17

18

1 INTRODUCTION

2 In the Bengkulu fishing village in Sumatra where one of us (DF) conducted ethnographic
3 fieldwork, ceremonies are communal affairs. The atmosphere is festive and people are happy.
4 However, if someone appears not to be working hard or, even worse, fails to help at all, people
5 scowl, make disparaging remarks about the shirker, and may even sever social relations, forgoing
6 future opportunities to interact with him and benefit from his hospitality. When asked why they
7 work so hard, and why they are willing to ostracize shirkers even when it is costly to themselves,
8 people answer in one of two ways: They make reference either to past social interactions (e.g.,
9 “I’m cooking for her wedding because she helped at my father’s funeral,” etc.), or to emotions
10 (e.g., “I’d be ashamed not to help out when everyone else is working so hard,” etc.). Moreover,
11 even when people only make reference to past events, they often do so in a highly emotional
12 fashion.

13 We believe that, far from reflecting a parochial culture, the patterns described above
14 illustrate universal aspects of human psychology and behavior: This chapter is premised on the
15 claim that human cooperation is profoundly shaped by, and perhaps only possible because of,
16 emotions. We will examine the manner in which different emotions shape behavior in
17 cooperative contexts; we include under the rubric of ‘emotion’ additional subjective experiences,
18 such as *sympathy*, which have strong affective connotations. While framed within an
19 evolutionary psychological perspective, our goal is not to present definitive evidence of the
20 validity of this particular approach, but rather to spur future investigations of the role of emotions
21 in cooperation. Toward that end, on an emotion-by-emotion basis we will both briefly describe a
22 variety of existing findings and present a number of hypotheses, specifying discrete, testable
23 predictions whenever possible.

24

1 **Theoretical Background**

2 In order to maximally stimulate debate and prompt additional research, we adopt here an
3 extremely broad conception of cooperation. Whether defined in terms of absolute or relative
4 payoff structures (cf. Dugatkin 1990), or merely with regard to the intentions of the actors
5 involved, human cooperation encompasses an enormous range of contexts and behaviors.
6 Cooperation may involve either simultaneous or sequential actions. The behaviors of cooperators
7 may be relatively independent, or they may be tightly coordinated and synchronized. The
8 number of cooperators may range from two to several million. Cooperative action may take
9 place over time scales ranging from minutes to generations, and may involve direct or indirect
10 reciprocity (Trivers 1971, Alexander 1987). Such activities can consist of either coordinated
11 collective action or individual contributions to public goods. Moreover, the line between
12 cooperative and non-cooperative action is often blurry. Since a) it is often empirically difficult to
13 discern whether activities such as resource sharing constitute genuine cooperation or merely a
14 coerced compromise, and b) the latter is sometimes a precursor to true cooperation, we cast a
15 broad net, including in our discussion a class of interactions that we term ‘pseudocooperation,’
16 that is, superficially harmonious yet not truly cooperative social behavior.

17 Today cooperation is arguably one of the most important determinants of human survival
18 and success, and this is likely to have been even truer for that vast majority of our species’
19 history when we lived as nomadic hunter-gatherers (Boehm n.d.). This suggests that natural
20 selection will have favored psychological attributes that enhance the individual’s ability to
21 engage in, and profit from, cooperative enterprises. This observation interlocks with a growing
22 movement in the psychological sciences wherein emotions are viewed as discrete mechanisms
23 crafted by evolutionary processes in order to shape behavior in ways that enhanced biological
24 fitness (i.e., survival and reproduction) under ancestral conditions (Frank 1988, Nesse 1990,
25 Cosmides and Tooby 2000).

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1 Identifying and defining emotions is a complex (and contested) enterprise. While facial
2 expressions and other display behaviors can be a useful index (Ekman & Friesen 1971), we
3 believe that the most productive approach is that which seeks to describe the generic eliciting
4 conditions and outcome behaviors associated with a given emotion (see Lazarus 1991, Russell
5 1991, Fessler 1999). In this view, each emotion is associated with a logically distinct class of
6 events, and each emotion shapes the organism's resulting behavior in a broadly predictable
7 fashion. This approach is congruent with a theoretical framework wherein emotions are viewed
8 as adaptations produced by natural selection, as emotions seem to parse the world into distinct
9 fitness-relevant tasks, directing attention and memory resources to the given task, heightening the
10 salience of particular courses of action, and reweighting the assessed costs and benefits of
11 different courses of action in a fashion that is adaptive in the environment in which the organism
12 evolved (Izard 1977, Nesse 1990, Cosmides and Tooby 2000). For example, the emotion *fear* is
13 elicited by the threat of imminent harm; it channels attention selectively to the source of the
14 threat, highlights information relevant to the threatening situation in memory, foregrounds
15 behavior relevant to avoidance or escape, and diminishes the perceived costs associated with self
16 protection. As Darwin (1872) recognized, emotions such as fear likely possess a deep
17 phylogeny, as a wide variety of mammals respond to the same class of events in much the same
18 fashion, and exhibit similar display behaviors. However, in contrast to fear, complex emotions
19 such as *shame* and *moral outrage*, though constructed upon pan-mammalian foundations,
20 nevertheless appear to be unique to humans, a conclusion that is consistent with both our
21 elaborate cognitive capacities and our extreme reliance upon socially transmitted information and
22 cooperation among non-kin (cf. Fessler 1999).

23 Some emotions are explicable primarily in terms of the influences that they exercise in
24 potential cooperative contexts; others function in a wide range of contexts, including situations of
25 potential cooperation and pseudocooperation. Some emotions operate primarily in dyadic
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1 interactions, while others have their strongest effects in collective action contexts, a distinction
2 that serves to organize the discussion which follows.

3

4 **EMOTIONS THAT OPERATE PRIMARILY IN DYADIC RELATIONSHIPS**

5 **Romantic Love**

6 A barrier to cooperation is the impulse to defect in the short term for immediate gains,
7 behavior which destroys ongoing mutual trust relationships. This impulse may stem from
8 foreshortened time horizons, steep time discounting, or inaccurate assessments of the likelihood
9 that others will learn of one's actions.¹ However, when the benefits of mutual trust relationships
10 exceed the gains to be reaped by defection, individuals are well-served by the possession of
11 mechanisms that counteract this impulse and lead them to forego defection. A number of
12 investigators (Hirshleifer 1987, Frank 1988, 2001, Fiske in press) have suggested that some
13 emotions can be understood as mechanisms designed to commit people to behavior that yields
14 long-term payoffs, thus overcoming the temptation for short-term defection. *Romantic love*, a
15 universal human emotion that underpins pair bonding (Jankowiak & Fischer 1998, Harris 1995),
16 appears to be such a mechanism.²

17 As a consequence of the prolonged period of juvenile dependence characteristic of our
18 species, both males and females can benefit from long-term cooperative mating relationships, as
19 the increased survivorship resulting from biparental care can outweigh the benefits of more
20 promiscuous mating patterns. However, both parties nevertheless face strong temptations to

¹ It is unclear why natural selection did not simply eliminate these handicaps rather than constructing compensatory mechanisms; nevertheless, an understanding of the advantages of circumventing these pervasive limitations sheds considerable light on the adaptive utility of a variety of emotions (see Frank 1988, 2001, Bowles & Gintis 2002, Fiske in press).

² In many traditional societies individuals often do not choose their spouses, as marriages are arranged by kin. However, it is probable that, in ancestral hunter-gatherer societies, the combination of economic self-sufficiency and considerable physical mobility were such that

1 defect. On the one hand, because a man's minimum obligate investment in reproduction is small,
2 following copulation men may abandon their mates in favor of other women, thus foisting all of
3 the costs of childrearing onto the mother. On the other hand, because women can reap both
4 genetic and material benefits from extra-pair copulation, women may cuckold their mates,
5 leading men to mistakenly invest in other men's offspring. Romantic love appears to be part of a
6 suite of mechanisms designed to prevent mates from defecting on the relationship, and,
7 importantly, signaling this commitment to their partners.

8 During the initial or *limerant* phase of romantic love, individuals focus all of their mating-
9 related thoughts and actions on a single person. Later, following sustained emotional and
10 physical consummation of the relationship, this obsessive focus fades away (Tennov 1998).
11 While the birth of children and the creation of similar joint investments likely later reduces the
12 temptation to defect due to a common interest (a condition indexed subjectively via the emotion
13 *companionate love*), existing accounts of love-as-commitment-device (e.g. Frank 1988, 2001)
14 have overlooked the time-limited nature of the limerant phase. It is precisely this initial phase
15 that is particularly important given that the risk of defection is very high in the early part of a
16 relationship. Elizabeth Pillsworth (personal communication) has hypothesized that, during the
17 initial phase of a relationship, the obsessive aspect of romantic love may influence behavior in a
18 fashion that effectively spans the ensuing interval, as individuals who are 'crazy in love' may
19 'burn their bridges' by openly eschewing alternative mating opportunities and weakening or
20 severing other valuable social ties. Having limited their mating options and social contacts,
21 individuals are thus strategically committed to maintaining the chosen relationship; likewise,
22 because the 'bridge-burning' behavior is public, both the chosen partner and any potential rivals
23 are able to assess the level of commitment, i.e., the behavior constitutes an honest signal. In this

individual preferences could nevertheless substantially influence mate selection (for a contemporary example, see (Shostak 1981); for additional discussion, see Harris 1995).
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1 model, romantic love functions to enhance commitment in different ways at different stages of
2 the relationship. Initially, limerance leads to a single-minded focus on one partner. As limerance
3 fades commitment is maintained by the social consequences of behavior during the limerant
4 phase. Finally, the creation of joint investments, a state subjectively marked by companionate
5 love, solidifies commitment once more.

6 In the above account companionate love serves to mark a valuable relationship,
7 highlighting it in a fashion that decreases the likelihood of defection. This function seems to be
8 achieved through the combination of a number of subjective components. Partners experience
9 satisfaction and security in one another's company and distress at prolonged separation, emotions
10 that motivate the actors to preserve the relationship. Importantly, actors also experience a
11 sympathetic orientation toward the partner wherein the prospect of harm befalling the partner is
12 cause for distress; the desire to avoid inflicting harm then motivates abstention from defection
13 (see Frank 1988, 2001). It is likely that the same features characterize subjective experiences
14 attending friendships, relationships which, like mateships, both present the opportunity for
15 defection and, in the event that defection can be avoided, hold the promise of substantial long-
16 term benefits (see Silk, this volume).

17

18 **Gratitude**

19 Companionate love, sympathy, and affiliative 'liking' all address overarching features of
20 a given social relationship, i.e., how an actor feels about somebody. In contrast, a second class of
21 emotions relevant to cooperation addresses how an actor feels about something somebody has
22 done. For example, though remarkably understudied (Haidt, in press), *gratitude* likely plays an
23 important role in fostering and maintaining cooperation (Trivers 1971). Gratitude focuses both
24 attention and a positive, affiliative orientation on a party who has supplied the actor with a
25 substantial benefit. In the context of its initial elicitation, gratitude seems to prompt the actor to
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1 recognize a valuable interaction partner and subsequently signal a willingness to reciprocate, thus
2 either a) establishing the grounds for a new relationship, or b) reassuring a longstanding partner
3 that the debt has been registered. Most important of all, while the duration and intensity of
4 gratitude are likely functions of both the perceived size of the benefit and a variety of individual
5 attributes, to the extent that gratitude endures, in conjunction with affiliative attitudes it motivates
6 a desire to reciprocate, and to defend the interests of the benefactor (Trivers 1971). Subjects in
7 behavioral economics games often violate the assumptions of traditional rational actor models by
8 demonstrating a willingness to incur monetary costs in order to reward partners for perceived
9 cooperative or altruistic behavior (Berg, Dickhaut, and McCabe 1995, Andreoni, Haubert, and
10 Vesterlund, unpublished manuscript). Experimental games conducted by Andreoni et al., for
11 instance, revealed that even in one-shot dyadic proposer-responder games, rewards increased
12 when exogenous factors compelling generosity became unavailable (i.e., when opportunities to
13 punish were absent). The pattern of results obtained by Andreoni et al. suggests that increased
14 willingness to reward was linked to responders' evaluation of high offers that were uncompelled
15 by the threat of punishment as being more generous. While such experiments do not directly
16 examine the role of emotions, these results are in keeping with the possibility that subjects
17 respond with gratitude to uncompelled acts of generosity and thus feel subjectively motivated to
18 reciprocate in kind. In sum, while it is possible to experience gratitude in anonymous or
19 transitory interactions, the emotion appears to be designed to prolong potentially beneficial
20 cooperative relationships between known actors.

21

22 **Anger**

23 If gratitude is elicited by receipt of a benefit, its opposite is *anger*, elicited by actual or
24 attempted exploitation or harm (Izard 1977). More formally, anger is the response to the
25 infliction of a cost. In addition to showing an “irrational” willingness to reward generosity,
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1 subjects in behavioral economics experiments also show an eagerness to punish uncooperative
2 partners (Roth 1995, Fehr & Gächter 2000, Andreoni et al. n.d.). In the ultimatum game, where
3 partners in the role of respondent can “spitefully” prevent both partners in the dyad from
4 receiving a payoff by rejecting the offer of the proposer, respondents demonstrate reluctance to
5 accept low offers and a willingness to punish by rejecting such offers (ibid.). Exploring the
6 relationship between perceptions of fairness, emotions, and choices, Pillutla and Murnighan
7 (1996) conducted an ultimatum game employing outside options, varying information, and
8 varying common knowledge, then asked respondents to report their feelings. Anger, elicited by
9 perceived unfairness, was commonly associated with rejections, and was particularly frequent
10 when respondents rejected offers that exceeded their outside options. Bosman and van Winden
11 (2002) conducted power-to-take games in which players could only reduce the amount that others
12 could appropriate by destroying their own endowment. Using self-report measures of emotional
13 response to appropriation, the authors found that irritation (strongly correlated with anger) and
14 contempt (see below) were linked with the spiteful elimination of a player’s own earnings.
15 Similar patterns occur in public goods games, as initially cooperative subjects eventually
16 spitefully reduce their contributions in order to strike out at low contributors whose free-riding
17 angers them (Andreoni 1995). Together, these results clearly demonstrate that, even within the
18 confines of finite anonymous games, angry individuals often place paramount importance on
19 harming the transgressor, and are willing to incur substantial costs in order to do so.

20 Though sometimes destructive to cooperation, anger can also be eminently functional.
21 Focusing attention on the transgressor to the exclusion of other facets of the world, anger
22 motivates actors to strike out at those who transgress against them, thus inflicting costs on the
23 transgressor which then reduce the attractiveness of future attempts at transgression (see also
24 Trivers 1971; McGuire & Troisi 1990, Edwards 1999:140-1). The stronger the response to
25 transgression, the greater the deterrent effect (Daly & Wilson 1988). This goal is effected in
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1 anger by simultaneously enhancing the subjective value of retribution and reducing the salience
2 of costs entailed therein, thus sometimes leading to punishments that seem out of proportion with
3 the offense (cf. Trivers 1971). Consistent with this, experiments demonstrate that angry subjects
4 make optimistic risk-estimates and show more risk-seeking behavior (Lerner and Keltner 2001).
5 These psychological changes are likely enhanced by the presence of an audience since, when
6 news of the “irrational” strength of the actor’s response spreads, others who might have
7 contemplated transgressing against the actor will also be deterred (Daly & Wilson 1988).

8 Anger, with its universally recognized and largely involuntary facial display (Ekman
9 1992), can be seen as yet another example of the manner in which natural selection has used
10 emotions as a means of overcoming the consequences of the tendency to both discount the future
11 and underestimate the extent of others’ knowledge of one’s actions (cf. Fiske in press). Time
12 discounting alone would reduce the incentive for responding to transgression since the costs of
13 reacting are paid in the present but the benefits of deterrence are reaped in the future (Frank 1988,
14 2001). Similarly, misjudging the extent of others’ knowledge would reduce the incentive for
15 responding since the reputational aspects of deterrence may be underestimated.

16 Although anger is not limited to contexts relevant to cooperation, because exploitation is
17 the antithesis of cooperative interaction, knowledge of others’ propensity to experience anger
18 promotes cooperation by reducing the temptation to exploit actual or potential cooperative
19 partners (cf. Hirshleifer 1987, Frank 1988). Empirical results in economics experiments again
20 confirm this view. When asked about behavior in the context of economic games, subjects report
21 a) expecting to feel angry toward free riders, b) expecting to be the target of others’ anger if the
22 subject herself free-rides (Fehr and Gächter 2000), and c) being motivated to pursue cooperative
23 strategies by the anticipation of others’ anger (Fehr and Gächter 2002; see also Prasnikar & Roth
24 1992). Overall, punishment or the threat thereof prove more salient than does reward as an

1 incentive for cooperation or generosity in experimental economics games (Andreoni et al. n.d.),
2 and anger seems to be a key factor in the willingness to punish.

3 While cooperation is not isomorphic with the equitable distribution of resources, the two
4 are linked in that absence of the latter may interfere with the former, an interaction that is
5 importantly mediated by emotions. Howsoever ‘equitable distribution’ is locally defined (cf.
6 Henrich et al. 2001), it seems to involve a sense of entitlement such that, when distributions are
7 seen as inequitable, the less-benefited party often experiences the inequality as a transgression.
8 The detection of transgression then triggers anger, resulting in the infliction of costs on the other
9 party. Awareness of the possibility that the recipient of a smaller share will react with anger thus
10 leads actors to increase the equity of distributions; whether this behavior constitutes true
11 cooperation or merely pseudocooperation, by preserving the peace, a recognition of others’
12 potential for anger facilitates continued interaction, a prerequisite for future cooperation.

14 **Envy**

15 When actors identify a sizeable disparity between parties in the possession of, or access
16 to, valued goods or opportunities, those having less often wish to obtain more. The propensity to
17 experience such covetous desire is understandable given that, under ancestral conditions,
18 resources were likely a principal determinant of reproductive success. However, in addition to a
19 simple desire to obtain more resources, humans (and possibly other social mammals) experience
20 a more complex emotion, namely *envy*.³ In contrast to the simple desire to obtain that which
21 others possess, envy also includes a measure of hostility toward the more fortunate party.

³ Envy and *jealousy* are often treated as synonyms. However, although they partially overlap, the two are logically distinct -- whereas envy is elicited solely by a disparity in possession of a valued good, jealousy is elicited by a third party’s (actual or potential) disruption of an (actual or desired) dyadic social relationship. Jealousy experienced by the partner within such a relationship is thus akin to anger (a response to transgression), while jealousy experienced by the

1 Around the world, beliefs such as the ‘evil eye’ concretize the observation that envious
2 individuals are positively dangerous to those they envy (Dundes 1992, Schoeck 1969). Under
3 more controlled conditions, in an anonymous economic game, Zizzo and Oswald (2001) found
4 that a majority of participants were willing to give up large portions of their real-money stakes in
5 order to destroy portions of the winnings of more successful individuals; although no
6 psychological data were collected, the authors interpret this behavior as driven by envy.

7 Behavioral ecologists have suggested that much apparent sharing of resources (a form of
8 cooperation) is actually tolerated theft (a form of pseudocooperation), since resource possessors
9 should not exclude others when the costs of defense exceed the costs of allowing others access
10 (Blurton-Jones 1987; see Smith, this volume). In one-shot interactions those who do not possess
11 the given resource should be willing to incur costs approaching, but always less than, the benefits
12 that they would reap by gaining access; whenever incurring such costs allows the actor to inflict
13 costs on the resource possessor that exceed the costs to the latter of sharing, access should be
14 granted. It is therefore noteworthy that envious individuals seem to be willing to incur huge costs
15 in order to inflict costs on those envied -- presumably, it is this willingness that generates the
16 widespread fear of envious individuals. The disparity between the benefits of obtaining access to
17 a resource and the costs that envious individuals seem to be willing to incur suggests that the
18 strategic benefits of envy derive from iterated rather than one-shot interactions.

19 In a social environment consisting only of one-shot interactions, a resource possessor
20 cannot be sure of the costs that excluded actors are willing to pay in order to gain access, hence
21 the latter will have to incur costs in order to demonstrate such willingness, and this behavior must
22 be repeated in each one-shot interaction. However, in a world of repeated interactions, a few
23 dramatic examples of an actor’s willingness to pay substantial costs suffice to indicate to resource

non-partner desirous of such a relationship is akin to envy (a wish to displace the individual who possesses the coveted resource).

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1 possessors that failure to share with the actor in the future will be very expensive. Moreover, as
2 in the case of anger, reputational effects greatly augment this pattern, as third parties who witness
3 or otherwise learn of an actor's envious behavior are informed of the potential costs of not
4 sharing with the actor. Hence, by paying the large up-front costs of initially inflicting excessive
5 harm on those who do not share, the envious actor may avoid paying the individually smaller but
6 highly iterated costs of repeatedly forcing tolerated theft access. In this view, envy, like anger,
7 serves to instantiate in the present the dynamics of potential future transactions in a world of
8 repeated interactions. Like anger, envy thus overcomes time preferences that would otherwise
9 lead actors to forego paying high costs in the present in order to avoid even higher costs in the
10 future. This account of envy entails several testable predictions. First, in contrast to simple
11 covetous desire, envy should reliably be accompanied by a willingness to incur substantial costs,
12 including costs in excess of the value of the benefits associated with the resource at issue.
13 Second, individuals should generally be envious of (i.e., both covet the resources of and be
14 hostile toward) only those with whom they interact on a repeated basis – individuals may desire
15 the resources of strangers and may even attempt to take such resources by force, but they should
16 not feel true envy toward them. More broadly, just as knowledge that others may experience
17 anger should promote (overtly) harmonious iterated social interaction by increasing the equity of
18 distributions, knowledge that others may experience envy should foster peaceful coexistence by
19 enhancing generosity in general.

20

21 **Guilt**

22 Emotions such as anger can promote cooperation because they motivate actors to inflict
23 costs on selfish individuals. However, inflicting costs on individuals who are not selfish is
24 corrosive to both the establishment and the maintenance of cooperation, whether such actions
25 constitute intentional exploitation or accidental harm. Interestingly, such behavior can evoke a
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1 discrete emotion: Although *guilt* can be elicited by a variety of events (including simple norm
2 violations), the central elicitor is the infliction of harm on another, whether intentional or
3 unintentional (Hoffman 1982; Keltner and Buswell 1996), prototypically within a communal
4 relationship characterized by expectations of mutual concern (Baumeister, Stillwell, &
5 Heatherton 1994). Deliberate defection or careless mistakes can elicit guilt, just as initial
6 gratitude can segue into guilt when failure to reciprocate becomes perceived as defection. Guilt
7 focuses attention on the action and the harm that has been done to the other party, inflicts
8 subjective discomfort on the actor via its strongly aversive valence, and motivates the actor to
9 make amends by aiding or otherwise compensating the victim (Izard 1977, Baumeister et al.
10 1994, Tangney 1998). The functioning of guilt is thus precisely tuned to identifying and
11 reversing the damage done to a cooperative relationship. Furthermore, just as anticipation of
12 another's anger often leads actors to refrain from intentionally transgressing, anticipation of their
13 own guilt often leads them to refrain from intentionally defecting. Hence, via multiple avenues,
14 guilt can enhance cooperation (Trivers 1971, Frank 1988).

15 Using an iterated prisoner's dilemma game, Ketelaar and Tung Au (in press) found that
16 inducing guilt increased cooperativeness among previously uncooperative players. Using an
17 iterated ultimatum game in which affect was measured after the first round, the authors also
18 found that individuals who made selfish offers and reported experiencing guilt subsequently
19 made generous offers one week later. In both cases, comparisons (with those who had already
20 played fairly, with controls who did not undergo guilt induction, and with individuals who did
21 not report guilt after making selfish offers) indicated that guilt was a key factor in increasing
22 cooperativeness among uncooperative actors.

23 The fit between the demands of maintaining cooperative relationships and the functioning
24 of guilt is remarkable, and results such as Ketelaar and Au's provide compelling evidence of
25 guilt's efficacy in promoting cooperation. Given these facts, and given our argument that natural
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1 selection has favored emotions that enhance the ability to benefit from cooperative relationships,
2 it seems logical that guilt would be a universal human emotion. However, a word of caution is in
3 order. Unlike many of the emotions discussed thus far, it is questionable as to whether guilt is
4 experienced in all or nearly all societies. Although one large study reports evidence of guilt in
5 many cultures (Scherer & Wallbott 1994), our own unsystematic survey of the ethnographic
6 literature suggests that guilt is not lexically marked in many cultures, a somewhat surprising
7 finding given guilt's obvious utility in maintaining social order and enforcing norm adherence.
8 Furthermore, given that a key function of guilt is the repair of damage done to relationships, we
9 might expect that natural selection would have crafted an emotion display, particularly one
10 containing elements that are outside of volitional control, to accompany the subjective and
11 cognitive aspects of guilt. The flood of protestations of regret, apologies, and so on that often
12 attend guilt testify to the importance of communicating to the harmed party that reparations are
13 sincerely intended, harm was inflicted accidentally, etc. If guilt is an evolved panhuman
14 emotion, why is there no universal involuntary display associated with guilt (cf. Keltner &
15 Buswell 1996)?⁴ One possibility is that guilt is distinctly different from, say, romantic love or
16 anger in that, rather than being a product of biological evolution, guilt may be the result of
17 cultural evolution, cobbled together from evolved emotions and dispositions such as regret,
18 sympathy, and so on. In this scenario, concepts of guilt and ways of inculcating this emotion
19 developed only in cultures in which the social structure, means of subsistence, etc. were most
20 compatible with a highly autonomous mode of behavior regulation (in contrast, for example, to
21 shame – see below). We believe that both the biological and the cultural accounts of the origins

⁴ Some advocates of the position that guilt is an evolved emotion argue that dynamic whole-body displays accompany guilt (T. Ketelaar, personal communication). However, Wallbott (1998) found that, in contrast to emotions such as shame, trained actors were unable to use dynamic whole-body displays to convey guilt to coders.

1 of guilt are sufficiently coherent as to justify a concerted research effort to determine which is
2 correct.

3

4 **Righteousness**

5 The core elicitor for guilt is the infliction of harm. However, norm violation alone can
6 potentially elicit guilt. This observation draws our attention to the emotion that is arguably the
7 opposite of guilt, an understudied affect that we refer to as *righteousness*. Whereas guilt is an
8 aversive state experienced as a consequence of rule violation, righteousness is a rewarding state
9 experienced as a consequence of rule adherence. We claim that humans feel a distinct positive
10 emotion when they ‘do the right thing’ (cf. Thomas Aquinas’ *Summa Theologiae*). People feel
11 good when they help a friend, provide gifts for a mate, or comfort a child. While these feelings
12 likely stem in part from sympathy, as the actor empathically experiences the benefit obtained by
13 the recipient (cf. Trivers 1971, Frank 2001), there seems to be an additional component to this
14 subjective state. Righteousness, a distinctive subjective reward, may be experienced when actors
15 behave in a fashion that promotes the formation and maintenance of social relationships,
16 reflecting the recognition that the actor has become valuable to others, or has earned social credit.
17 More broadly, righteousness may play an important role in motivating general norm adherence,
18 behavior which, as we will discuss at length, may benefit the actor in part through subsequent
19 enhanced recruitment into cooperative ventures (cf. Bowles & Gintis 2002). Hence, via a number
20 of pathways, righteousness may play an important role in cooperation, one that is deserving of
21 further investigation.

22

23 **Contempt**

24 We have suggested that guilt and righteousness facilitate the formation and preservation
25 of cooperative relationships. However, not all cooperative relationships are worthwhile – in
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1 some cases the benefits of defection exceed the benefits of cooperation. In a world without
2 emotions that function to preserve cooperative relationships, steep time discounting alone would
3 lead to high rates of defection. However, the existence of relationship-preserving emotions
4 creates a situation in which it may be advantageous to explicitly mark individuals who have little
5 of value to offer the actor. We suggest that *contempt* is the emotion accompanying exactly such
6 an evaluation. By highlighting the low value of the other individual, contempt predisposes the
7 actor to either a) avoid establishing a relationship, b) establish a relationship on highly unequal
8 (i.e., exploitative) grounds, or c) defect on an existing relationship. Consistent with the low
9 valuation of the other, contempt seems to preclude the experience of prosocial emotions in the
10 event that the actor is able to exploit the partner, apparently by framing the harm as merited.

11 Because contempt is highly corrosive to the formation and maintenance of cooperative
12 relationships, actors can be expected to be highly sensitive to any indications that a prospective or
13 current partner experiences contempt toward them. When an actor concludes that an other's
14 contempt accurately reflects disparities in their relationship caused by either a) the actor's own
15 failure to adhere to a social norm (cf. Rozin, Lowery, Imada, & Haidt 1999), or b) an overarching
16 inequality in status, the recipient of contempt often feels *shame* (see below), an emotion that
17 motivates either appeasement or avoidance (Izard 1977, Gilbert 1997, Elster 1998, Fessler 1999).
18 Appeasement serves to maintain the relationship despite the disparity, while avoidance serves to
19 minimize exploitation. In contrast, when an actor concludes that an other's contempt exceeds
20 what is merited by any disparities in their relationship, the recipient of contempt often feels anger
21 (Fessler 1999; see also Bowles & Gintis 2002), a response that serves to preempt exploitation
22 through the demonstration of a willingness to incur high costs in order to inflict harm on
23 transgressors.

24

1 EMOTIONS THAT IMPORTANTLY OPERATE IN COLLECTIVE CONTEXTS

2 Shame and Pride

3 While there is substantial evidence supporting the universality of contempt (Biehl,
4 Matsumoto, Ekman, & Hearn 1997), as in the case of guilt, the status of righteousness as a
5 panhuman emotion is unclear. Investigating these emotions in Bengkulu, D.F. found that
6 informants rarely discussed anything resembling guilt, frequently only providing accounts of
7 *regret* (e.g., “I wish that I hadn’t cheated because it caused so many problems,” etc.). Likewise,
8 attempts to elicit accounts of righteousness often led merely to reports of sympathy (e.g., “When
9 I give her things she is happy, and that makes me happy too,” etc.). However, while guilt and
10 righteousness were essentially absent from informants’ discourse, reports of shame and its
11 opposite, *pride*, were pervasive.⁵

12 Shame is the negative emotion experienced when an actor knows that others are aware
13 that the actor has behaved in a blameworthy fashion, while pride is the positive emotion
14 experienced when the actor knows that other parties are aware that the actor has behaved in a
15 commendable fashion (Gilbert 1997, Fessler 1999, Katz 1999).⁶ Shame thus constitutes a
16 subjective penalty for norm violation and pride constitutes a subjective payoff for norm
17 adherence. Conformity to norms is fundamental to myriad forms of human cooperation for at
18 least three reasons, namely 1) many norms directly address cooperative behavior (i.e., the need to
19 reciprocate, etc. -- Cooter & Eisenberg 2001, Henrich et al. 2001); 2) many norms structure

⁵ Recently Fontaine et al. (2002), seeking to compare the semantic domains of emotion in Indonesian and Dutch, argued that the Indonesian term *bersalah* is equivalent to *guilt*. However, *bersalah*, which literally means ‘to be in the wrong’ or ‘to have committed a wrong,’ is, as the authors themselves demonstrate, semantically associated primarily with fear (cf. Heider 1991). There is thus little evidence that *bersalah* is equivalent to guilt. Even holding aside differences in subjective experience (or ‘qualia’), behavioral outcomes suffice to reveal the lack of similarity -- whereas guilt motivates reparations and/or self-punishment, fear motivates avoidance.

⁶ Note that these eliciting conditions depend upon the ability to understand others’ mental states. Reflecting their roots in the emotions shared with other primates, shame and pride can also be

1 interactions in a fashion that precludes negotiation and conflict (cf. Young, this volume); and 3)
2 complex cooperation is often contingent on the precisely timed coordination of behavior, an
3 objective that is best achieved through the sharing of understandings regarding the nature of the
4 appropriate actions at hand (cf. McElreath, Boyd, & Richerson in press). While an optimal
5 strategy might therefore be to adopt a Machiavellian approach to norms, conforming only when
6 the benefits (including those mediated by reputation) exceed the costs, the cognitive constraints
7 discussed earlier are such as to make it likely that Machiavellian actors will err, eventually
8 destroying reputations that have enormous value over the long run. In contrast, such errors will
9 not be committed by actors who a) have internalized norms, and hence see them as self-evidently
10 valid, and b) experience others' assessments of norm-conforming or norm-violating behavior as
11 intrinsically rewarding or punishing (Cooter & Eisenberg 2001, Bowles & Gintis 2002). Shame
12 and pride, for which there is substantial evidence of universality (Scherer and Wallbott 1994;
13 Fessler 1999), perform precisely the latter function (Fessler 1999, Bowles & Gintis 2002, Bowles
14 and Gintis this volume). Hence, it appears that, together with the existence of external
15 punishment (discussed below), the benefits to be derived from cooperation may have been a
16 significant factor favoring the evolution of an affective system that promotes norm adherence
17 (Fessler 1999, Bowles and Gintis this volume).

18 Shame and pride can promote cooperation in purely dyadic interactions, as the actor can
19 feel shame if she defects and the partner knows about, or is likely to learn of, her defection, while
20 she can feel pride if she fulfills her reciprocal responsibilities and the partner knows about, or is
21 likely to learn of, her actions. However, while these emotions, or the anticipation thereof, can
22 influence choices even within encapsulated dyads, it is in the greater social arena that shame and
23 pride most profoundly affect behavior: Informants in both Bengkulu and California made it

elicited by cognitively simpler conditions of subordination or dominance, respectively (see Fessler 1999; Gilbert, Pehl, & Allan 1994).

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1 abundantly clear that the larger the audience that is privy to one's actions, and the more
2 prestigious the members of that audience, the more intense the emotions that attend failure or
3 success, norm violation or norm fulfillment. The influence of an audience is understandable if
4 the function of shame and pride is to promote conformity to social standards in order to both
5 avoid punishment and gain access to cooperative enterprises, as a) the larger the audience, the
6 larger the number of prospective punishers and prospective collaborators, and b) the more
7 prestigious the audience, the greater the value of prospective collaborators.

8 The impact of audience awareness on the intensity of shame and pride likely importantly
9 influences cooperative behavior in two ways. First, gossip networks raise both the costs of
10 defection and the benefits of cooperation in dyadic relationships, as the reputational
11 consequences of actions will determine both the actor's access to additional opportunities for
12 cooperation and the actor's exposure to third-order punishments or rewards. Actors who are
13 concerned with the prospect of experiencing shame or pride are more likely to consider publicity
14 when weighing up possible courses of action, hence these emotions often shape behavior in ways
15 that benefit from information transmission. Second, many of the most important human
16 cooperative ventures are communal rather than dyadic.

17 Communal cooperative enterprises are substantially more complex than dyadic
18 cooperation: In communal enterprises the large number of actors makes it more difficult to keep
19 track of individuals' actions, thus enhancing opportunities for free riding and other forms of
20 defection (e.g., it is easier to get away with not pulling one's weight when there are 30 people on
21 a rope than when there are 2, etc.). In addition, communal enterprises often require more
22 elaborate coordination of behavior, including more extensive role specialization and more
23 multiplex synchronization, than is true in dyadic interactions (e.g., raising a barn is vastly more
24 complicated than paddling a two-person canoe, etc.). Importantly, the large number of actors
25 involved in communal enterprises means that a sizeable and interested audience is readily at hand
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1 should it come to light that an actor has behaved in a blameworthy or praiseworthy fashion. As a
2 consequence, the potential immediate intensity of shame and pride is greater in communal
3 undertakings than in dyadic interactions. Taken together, the above factors make it plausible
4 that, as our ancestors developed more elaborate forms of communal cooperation, the selective
5 pressures favoring motivational mechanisms that would enhance inclusion in such ventures
6 increased, thus reinforcing the evolution of the capacity for, and propensity to experience, shame
7 and pride.

8 The influence of the size and composition of the audience on the experience of shame and
9 pride also shapes behavior in communal cooperative relationships that do not involve collective
10 action, chief among which are common goods contexts. While not involving the difficulties of
11 coordination inherent in collective action, common goods contexts are often even more
12 vulnerable to cheating than communal activities since, in contrast to the latter, individuals often
13 use, and sometimes contribute to, the commons when others are not present (e.g., the cleanliness
14 of departmental microwaves deteriorates because these shared resources are accessed
15 individually). While common goods contexts thus sometimes pose problems of oversight, they
16 share with communal activities the fact that they involve a built-in audience with an interest in
17 information pertaining to individuals' performances. This provides potential leverage over actors
18 in part via shame and pride – in Bengkulu the names of those who failed to contribute to the
19 maintenance of the village drainage ditches were read over the mosque's loudspeaker, as were the
20 names of those who made contributions to the upkeep of the mosque. This elicited intense shame
21 and pride in the respective individuals, with noticeable consequences for ensuing behavior. More
22 formally, Bowles and Gintis (2002) discuss public goods games with costly punishment in which
23 low contributors increase their contributions in response to punishment despite the fact that doing
24 so is not an optimal response within the payoff structure of the game; the authors infer that low
25 contributors interpret punishment as simultaneously delineating the norm for cooperation and
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1 expressing disapproval at its violation, conditions that elicit shame, resulting in increased
2 prosociality.

3

4 **Moral Outrage and Moral Approbation as Solutions to Common Goods Problems**

5 Publicizing the identities of cheaters and cooperators are forms of active punishment and
6 reward in the cooperative context, categories of behavior that include ostracism and violence on
7 the one hand, and recruitment and gifts of resources on the other. While the utility of such
8 actions in dyadic cooperation is clear, and while this behavior is demonstrably important in
9 fostering communal cooperation (Fehr & Gächter 2002), communal cooperation involves the
10 added difficulty that the actions of punishing cheaters and rewarding cooperators are themselves
11 both costly and a form of common good. As a consequence, actors will be tempted to free ride
12 by letting others pay the costs of punishing and rewarding while sharing in the benefits of
13 enhanced cooperation which result. The solution to such second-order cheating is to institute
14 third-order punishment, that is, to punish individuals who fail to punish individuals who cheat
15 (and, less commonly, to punish individuals who fail to reward individuals who cooperate in an
16 exemplary fashion) (Boyd and Richerson 1992).

17 Models suggest that systems of third-order punishment are stable once a sizeable number
18 of punishers exist (Boyd and Richerson 1992, Henrich and Boyd 2001). Likewise, experimental
19 results underline the importance of “altruistic punishment” in sustaining cooperation in public
20 goods games (Yamagishi and Sato 1986, Fehr and Gächter 2002). However, the self-reinforcing
21 nature of such systems does not explain the forces needed to create the initial critical mass of
22 individuals inclined to punish second-order cheaters (Boyd and Richerson 1992). We propose
23 that this issue is resolved once it is recognized that enforcing norms serves a communicative
24 function. All else being equal, present behavior is a reasonable predictor of future behavior (cf.
25 Shoda, Mischel, & Peake 1990, Eron and Huesmann 1990). Moreover, the more costly the
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1 present behavior, the more likely this is to be true, as cheap actions, being easily engaged in, are
2 less revealing of stable underlying dispositions. By incurring costs in policing norm adherence,
3 third-order punishers advertise to the community their support for, and conformity to, shared
4 standards for behavior. Accordingly, active, costly, and highly public pursuit of norm violators,
5 including second-order cheaters, indicates a high likelihood that the actor will herself conform to
6 norms in the future (compare with Smith, this volume, on resource sharing). Because conformity
7 to norms is closely linked to cooperation, advertising one's conformity increases one's
8 attractiveness as a potential cooperative partner. When long-term benefits are taken into
9 consideration, punishing norm violators can thus be seen as a self-interested act performed in
10 pursuit of the benefits of cooperation.⁷ In Bengkulu, D.F. witnessed a mob's attempt to 'tar and
11 feather' a prostitute. Bystanders commented approvingly on the vociferous outrage expressed by
12 the mob's young male leaders, including outrage directed at other young men who hung back,
13 failing to take an active role in the enterprise. When young men were later recruited for
14 participation in communal ceremonies, the leaders of the mob were prominent in the group
15 selected. As this example illustrates, because the reputational benefits obtained by punishing
16 norm violators are independent of gains reaped directly from the cooperation-enhancing effects
17 of punishment, actors can profit by inflicting costs on individuals who violate any of a wide
18 variety of norms, including norms that pertain to cooperative ventures of which the actor is not
19 herself a part or, more broadly, norms that do not directly pertain to cooperation at all.

20 Because the benefits entailed by punishing norm violators only accrue over the long-term,
21 issues of short time horizons and steep discounting of the future would often lead actors to forgo

⁷ Note that while our position shares some of the signaling features outlined by Bowles and Gintis (this volume), our account of prosocial behavior as ultimately wholly self-interested stands in contrast to the proposal that some form of group selection has favored a predisposition for 'strong reciprocity' (see Bowles and Gintis this volume, Boyd and Richerson this volume, Fehr et al. this volume, Gintis 2000, Boehm 1997). While our perspective does not rule out the possibility of group selection, if correct, it may lessen or even obviate the need for it to have occurred. *All rights reserved by the authors. No citing, abstracting, or other usage is permitted without permission.*

1 punishing norm violators. Similarly, the problem of accurately assessing the likelihood that
2 others would quickly learn of one's actions would lead individuals to often erroneously refrain
3 from punishment, thereby risking becoming the targets of punishment themselves. Yet again, the
4 solution hit upon by natural selection appears to be to employ emotions in shaping propensities
5 and behaviors. Moreover, in this case the answer to the problem was readily at hand, for
6 selection needed only to exapt (i.e., put to a new purpose) an existing emotion. *Moral outrage*,
7 an emotion subjectively indistinguishable from simple anger, is that state which occurs when
8 norm violations are experienced as if they were transgressions against the self. It thus appears
9 that, with the co-evolution of complex forms of cooperation and shared standards for behavior,
10 selective pressure favored individuals who possessed a motivational system that would lead them
11 to spontaneously punish norm violators, and this was achieved by subjectively linking
12 transgressions against norms to transgressions against the self, thus recruiting the pan-
13 mammalian emotion anger to the uniquely human job of advertising one's own norm adherence.

14 The above account of moral outrage leads to specific predictions regarding contextual and
15 demographic features of the experience of this emotion. First, genuine, spontaneous moral
16 outrage (as opposed to faked versions thereof) is likely to be stronger when a norm violation is
17 witnessed or communicated in front of an audience than when no audience is present. Second,
18 the makeup of the audience should influence the intensity of the moral outrage experienced –
19 moral outrage should be maximal when the audience consists of attractive potential collaborators
20 (e.g., persons having high prestige, valued skills, strong social networks, etc.) and/or individuals
21 who constitute an avenue for disseminating information to such potential collaborators, and
22 minimal when the audience consists of individuals who are neither attractive potential
23 collaborators nor an avenue for disseminating information to potential collaborators (e.g.,
24 outgroup members, etc.). Third, the intensity of moral outrage, and the costliness of the ensuing
25 behavior, should be highest in individuals who have the greatest need to advertise their
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1 attractiveness as cooperative partners (e.g., young men who are entering the political arena for the
2 first time), and lowest in individuals who have the least need to advertise their attractiveness as
3 cooperative partners (e.g., well-established high-prestige senior men) (note that this prediction
4 runs counter to a common-sensical assessment of norm-policing, as high-ranking individuals are
5 typically seen as the arbiters of norms, hence one might expect that they are the ones most
6 outraged by norm violations).

7 Like the punishing of norm violators, the rewarding of those who fulfill norms in an
8 exemplary fashion simultaneously generates a common good and serves as a means of
9 advertising the individual's own norm adherence. Hence, in part because of the value of
10 inclusion in cooperative relationships, actors benefit by contributing to the costs of supplying
11 both the stick and the carrot used to promote conformity. We therefore hypothesize that, for
12 reasons similar to those obtaining in the case of moral outrage, natural selection has produced an
13 emotion, which we term *moral approbation*, that leads individuals to be positively inclined
14 toward, and seek to reward, virtuous actors who behave in a model fashion. Whereas in moral
15 outrage the actor experiences another individual's blameworthy norm violation as if it had
16 inflicted a cost on the actor, in moral approbation the actor experiences another individual's
17 praiseworthy norm adherence as if it had provided a benefit for the actor. Accordingly, just as
18 moral outrage exapts anger from the domain of dyadic interactions to the domain of norm
19 compliance, moral approbation exapts gratitude in a similar fashion. The hypothesized benefits
20 to the individual of moral approbation are the same as those proposed for moral outrage – in both
21 cases, because conformists are more reliable than nonconformists, the actor profits from the
22 conspicuous advertisement of his or her endorsement of norms. Accordingly, the same
23 predictions described for moral outrage regarding audiences, demography, and so on also apply
24 to moral approbation. Additionally, because both punishing norm violations and rewarding norm
25 adherence reinforce norms, these actions can be further motivated by the experience of
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1 righteousness, the emotion that serves as a proxy for the benefits of conformity. Finally, by
2 increasing both the costs accompanying norm violation and the benefits to be reaped from norm
3 adherence, the presence of actors with a propensity to experience moral outrage, moral
4 approbation, and righteousness increases the attractiveness of norm adherence. In turn, increased
5 norm adherence furthers cooperation, both directly (via conformity to norms concerning
6 reciprocity, equitable divisions, etc.) and indirectly (via the facilitation of coordination across
7 participants).

8

9 **Admiration and Elevation**

10 Our informal observations suggest that moral approbation overlaps with the emotion
11 *admiration* but is not isomorphic with it. Admiration occurs in contexts in which the admirer
12 lacks some or all of the traits of the admired individual and wishes to acquire them (Henrich and
13 Gil-White 2001). In contrast, the desire to reward the virtuous actor that is central to moral
14 approbation is independent of the individual's own attributes or stature – a war hero may feel
15 moved to praise a Boy Scout who saves a baby from a burning building despite the fact that the
16 former exceeds the latter in bravery, altruism, and so on. As this example suggests, in direct
17 contrast to admiration, in moral approbation superiors may be inclined to bestow benefits on
18 inferiors.

19 Moral approbation also appears to substantially overlap with the emotion that Haidt (in
20 press) terms *elevation*. Haidt describes elevation as a positive emotion experienced upon
21 witnessing a good deed. However, whereas the motivational component of moral approbation
22 focuses on rewarding the praiseworthy individual, in elevation the motivational component
23 focuses on carrying out similar deeds oneself. Many of the examples that Haidt collected in
24 Japan, India, and the U.S. revolve around providing a benefit to others. Although Haidt does not
25 offer an account of how such an emotion could have evolved, we believe that this question is
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1 amenable to the same form of explanation as that which we applied to moral outrage and moral
2 approbation, namely that a seemingly altruistic act in fact contains a hidden benefit for the actor
3 in the form of advertising the actor's norm adherence, an action which increases the actor's
4 attractiveness as a partner in future cooperative enterprises (see Smith, this volume, on resource
5 sharing; also, compare with Gintis, Smith, & Bowles 2001).

6 To a large extent, assessment of norm adherence is relative – behavior is often judged as
7 praiseworthy or blameworthy through a process of comparison with others' recent actions (hence
8 the common justification offered in defense of rule violations, “everybody does it”). This means
9 that whenever someone publicly behaves in a praiseworthy fashion, they incrementally reinforce,
10 or even raise, the standard for appropriate action. If praiseworthy actions are an avenue whereby
11 individuals gain access to valuable cooperative opportunities, and if such opportunities are
12 limited, then public praiseworthy behavior on the part of one individual can constitute a threat to
13 others who are competing for the same opportunities. In effect, public praiseworthy behavior
14 throws down a gauntlet, challenging others to live up to the same standard or else lose out in the
15 race for inclusion in the most valuable cooperative ventures. Haidt specifies that elevation
16 motivates individuals to perform praiseworthy, often altruistic acts in the immediate aftermath of
17 witnessing such behavior, but both the feeling and the motivation fade after a short time. This is
18 exactly what we might expect if elevation is in fact prompting competitively prosocial behavior.
19 Actors ought not be any more prosocial than they need to be in order to secure coveted
20 cooperative opportunities. Accordingly, when others evince extensive prosocial behavior, actors
21 ought to respond in kind, and, conversely, when others limit their prosocial behavior, actors too
22 should scale back their efforts – to avoid either repeatedly overbidding or underbidding in the
23 game of costly norm adherence, actors ought not adhere to a fixed level of prosociality, hence the
24 influence of having observed others' actions should be time-limited. Finally, if this account of
25 elevation is correct, factors similar to those detailed above for moral outrage ought to influence
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1 the intensity of the emotion and the costliness of the resulting behavior, i.e., a) the size and
2 composition of an audience present ought to play a role, and b) the actor's relative need for
3 recruitment into coalitions ought to contribute. Lastly, note that, while there are parallels
4 between our position and good genes costly signaling explanations of pro-social behavior (e.g.,
5 Smith and Bleige Bird 2000; also Gintis et al. 2001), because our account focuses not merely on
6 ability but, moreover, on conformism and predictability as well, our position is not susceptible to
7 the criticism that, if show-off altruism signals genetic quality, it ought to occur in many species
8 (Gil-White and Richerson, in press). Likewise, the importance of reputation in the generation of
9 benefits via conformism (see Smith, this volume) explains why show-off altruism does not occur
10 even in those nonhuman species capable of developing rudimentary behavioral traditions (cf.
11 Fragaszy & Perry in press), since the absence of symbolic communication constrains the
12 reputational benefits of conformism among nonhuman animals.⁸

13

14 **Mirth**

15 By constituting subjective proxies for the fitness consequences that potentially attend
16 others' assessments of the actor's behavior, shame, pride, moral outrage, moral approbation, and
17 elevation all shape behavior so as to increase the likelihood of inclusion in beneficial coalitions.
18 Once such initial inclusion has been achieved, a second class of emotions come into play,
19 emotions that both index the value of the relationship for the actor and motivate signaling
20 behavior that reinforces the relationship by conveying that valuation. While there may be a
21 number of such emotions, we are particularly struck by the importance of *mirth*. Building on the
22 work of previous investigators, Thomas Flamson (personal communication) has developed a
23 theory exploring the origins and function of mirth. Noting that, ontogenetically, mirth first

⁸ Although Gintis et al. (2001) make reference to examples of food sharing in nonhuman animals, we are not convinced that these are comparable to human behavior in which the possessor of the
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1 appears in response to tickling, Flamson argues that mirth serves to index the fact that safe
2 intimate contact is occurring, i.e., the given interaction, though potentially agonistic, is actually
3 affiliative. Laughter, the behavioral expression of mirth, serves to signal that the vulnerable actor
4 trusts the affiliative intent of the other; the recipient of this signal then frequently provides
5 additional affiliative overtures, reconfirming his or her benign intent.

6 Mirth subjectively rewards the achievement of affiliation and shapes signaling that
7 reinforces the relationship. In adulthood, these paired functions are frequently evident during the
8 linguistically-mediated establishment of dyadic alliances such as friendships and mateships (cf.
9 Grammer 1990). However, it is in the larger social arena that this emotion seems particularly
10 important, as mirth and laughter appear to underlie a considerable amount of solidarity-building
11 in multiperson coalitions. Consistent with the claim that the core event consists of recognizing
12 and signaling solidarity, mirth is often elicited by statements which, from the perspective of the
13 outside observer, lack humorous content (Provine 1993). However, the solidarity-building
14 aspects of mirth can be enhanced through several types of strategic utterances. First, it seems that
15 speakers often employ information that is indexical of in-group membership. Second, it appears
16 that speakers often derogate out-groups. In both cases, mirthful response confirms both the
17 speaker's and the listener's statuses as in-group members, often prompting additional utterances
18 from other parties, and sometimes resulting in what seems to be an almost orgiastic spiraling of
19 solidarity-building.

20 While it is not difficult to observe the patterns of behavior described above, somewhat
21 surprisingly given both its evident frequency and its potential importance, mirth has received
22 relatively little scientific attention to date. Nevertheless, consistent with Flamson's general
23 account, investigations of prejudice suggest that humorous derogation of the out-group plays an
24 important role in the generation and maintenance of discrimination (Terrion & Ashforth 2002),

1 and organizational studies report higher efficiency in work-groups that laugh together compared
2 to those that do not (Pollio & Bainum 1983). More formally, participants in a gift-exchange
3 game behaved more altruistically after viewing a humorous movie clip (Kirchsteiger, Rigotti, &
4 Rustichini n.d.), and negotiators in a bargaining simulation behaved more cooperatively after
5 examining humorous cartoons (Carnevale & Isen 1986), patterns that are consistent with the
6 premise that, because it normally indexes the existence of a cooperative relationship, mirth
7 motivates prosocial behavior.⁹

8 In addition to the need to systematically investigate the influence of mirth and laughter on
9 cooperation, many intriguing questions remain unexplored, including the possibility that
10 humorous individuals provide a public good by catalyzing solidarity enhancement, a cost which
11 they might recoup via a number of avenues, including a) thereby increasing their attractiveness as
12 a coalition member; b) attracting admiring clients (cf. Henrich and Gil-White 2001); or c)
13 signaling their high mate value (cf. Miller 2000). Alternately, coalition members might
14 compensate humorous individuals for their services by accepting lower contributions of other
15 currencies, a pattern which, if it occurs, raises questions as to the management of second-order
16 free-riding.

17

18 **Corporate Emotions and Cooperation**

19 Throughout the above discussions we have repeatedly emphasized that cooperation is
20 facilitated in part through the promotion and maintenance of particular forms of social
21 relationships. Emotions play critical roles in these processes both by promoting prosocial
22 behavior and by raising the costs of antisocial behavior. However, in addition to these functions,

⁹ Both Kirchsteiger et al. and Carnevale and Isen suppose that behavior is a function of moods. This premise led both sets of investigators to employ manipulations (respectively, viewing a clip from *Schindler's List*, intended to evoke negative mood; giving a free notepad, intended to evoke positive mood) the influence of which on discrete emotions is unclear.
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1 emotions can play a key role in cooperation by virtue of the fact that they can be experienced in a
2 *corporate fashion*. By this we mean that anger, shame, pride, gratitude and so on can be elicited
3 by actions that affect some part of a group in which the actor is a member even though the actor
4 was not directly involved in the interaction (cf. Boyd and Richerson this volume). For example,
5 intervillage violence occurs not infrequently in Bengkulu, most commonly when a young man
6 from one village insults someone from another village – the action is experienced as a
7 transgression by all members of the second village, leading to widespread anger and calls for
8 retribution. We believe that the experience of corporate emotions is a consequence of the
9 interaction between those mental mechanisms responsible for producing the various emotions
10 and a separate mental mechanism, one which defines the boundaries of the individual as an
11 interest party. Close kin, buddies in an army squad, residents of the same village, or occupants of
12 a single lifeboat – in each case the interests of the individual are often aligned with the interests
13 of the group. Apparently as a consequence of the recognition of this alignment, the emotions
14 that normally respond to directly-experienced interindividual behavior can come to respond to
15 any information that pertains to the fate of the larger interest party.

16 The ability to experience corporate emotions interdigitates with many of the aspects of
17 cooperative behavior discussed thus far. For example, experiencing anger at transgressions
18 committed against a village-mate, and incurring costs as a consequence in order to harm the
19 transgressor, actively demonstrates to other members of the community that the actor aligns his
20 interests with theirs. Likewise, such actions show that the actor adheres to norms such as those
21 dictating community solidarity, mutual defense, and so on. As a result, individuals who
22 experience corporate anger and advertise and act on that experience constitute attractive partners
23 for future cooperative ventures. We believe that this explains why people go far out of their way
24 not only to advertise their affiliations to various groups, but also to demonstrably express
25 corporate emotions – we have seen fans of a winning sports team leave their television sets, rush
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1 out of their homes, and frantically search the streets for anyone with whom they can express
2 pride in the (spuriously corporate, in this case) group's achievements. In short, corporate
3 emotions not only function to promote the individual's interests by leading actors to act in the
4 group's interests, they also function to promote the individual's interests by shaping relationships
5 with fellow group members.

6

7 **THE IMPACT OF CULTURE ON THE ROLE OF EMOTIONS IN COOPERATION**

8 The identity and boundaries of interest groups are often culturally defined.¹⁰ This is
9 simply one of the innumerable ways in which culture influences cooperative behavior, notably
10 including the delineation of the appropriate levels of generosity, reactivity to transgression,
11 participation in communal ventures, and so on (cf. Henrich et al. 2001). Of particular relevance
12 for the present discussion is the influence of culture on the subjective salience, motivational
13 power, and moral valence of emotions. Cultures differentially elaborate on or ignore various
14 emotions. While the absence of lexical labels for, cultural schemas about, and socialization
15 practices concerning a given emotion does not preclude the ability to experience that emotion,
16 these conditions do reduce the salience of the emotion, the extent to which it shapes behavior,
17 and the frequency with which it is elicited (Levy 1973). Conversely, elaborate cultural marking
18 of an emotion can greatly enhance its subjective salience; how much the emotion shapes
19 behavior, and how frequently it is experienced, are in turn partially a function of the moral
20 valence assigned to the emotion in the relevant cultural schemas (Levy 1973, Briggs 1970,
21 Fessler in press). Together, these observations indicate that, even for those many emotions
22 which, being the product of our shared phylogeny, are panhuman, the influence of any given

¹⁰ We suspect that some of the cooperative behavior observed in economics experiments reflects the Western liberal cultural concept that all humans are members of a single social category and are thus deserving of equal treatment. In stark contrast to this idea, most cultural value systems

1 emotion on cooperative behavior can nevertheless be expected to differ substantially across
2 cultures. Investigators interested in exploring the role of emotions in cooperation must therefore
3 attend closely to the cultural backgrounds of participants in a given venture. Perhaps even more
4 important, diplomats must be attuned to the salience and valence of particular emotions in
5 specific cultures if they are to effectively mediate international conflicts and foster large-scale
6 cooperation.

7

8 **DISCUSSION**

9 Humans often behave in ways that contradict predictions derived from economists'
10 traditional rational actor models of behavior. The principal weakness of such models is their
11 failure to fully recognize both the proximate and the ultimate determinants of utility. Once it is
12 understood that a) emotions change the subjective importance of costs and benefits, and b) actors
13 take account of the influence of emotions on others' behavior, then many observable strategies
14 are 'rational' in the sense that they serve to maximize subjective utility. While recent efforts by
15 economists to more accurately capture the constituents of subjective utility using the concept of
16 'social preferences' (cf. Fehr et al. this volume) are an important step forward, we believe that if
17 investigators are to fully understand human cooperation, they must not be satisfied merely with
18 characterizations of the proximate determinants of subjective utility, but rather must also
19 investigate the ultimate factors responsible for those determinants. While idiosyncratic factors
20 unquestionably play a role in subjective experience, we are impressed by the underlying
21 similarities evident across diverse individuals and disparate cultures, similarities that are best
22 explained using an evolutionary perspective.

are premised on the existence of concentric social worlds, with out-group members not being seen as deserving of the same consideration as in-group members.
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1 Natural selection produces mechanisms that shape behavior in the service of maximizing
2 a single ultimate utility, biological fitness. Importantly, such mechanisms are reliant upon the
3 presence of features of the environment that reliably occurred over the course of the mechanism's
4 evolution (Tooby & Cosmides 1992). To the extent that it is shaped by evolved mechanisms,
5 contemporary behavior can thus be expected to reflect strategies that would have been
6 biologically rational under ancestral conditions. It is highly plausible that our ancestral social
7 environment, the world in which humans are 'designed' to operate, consisted of relatively stable
8 small-scale acephalous social groups in which cooperation generated critical benefits (Boehm
9 n.d.). Natural selection has thus produced a suite of emotions which, when operating in such a
10 setting, effectively mitigate both the temptation of short-term defection and the danger that others
11 will be similarly tempted. Likewise, because of the importance of conformity to shared standards
12 for behavior in human cooperation, selection has crafted emotions that enhance both norm
13 adherence and the punishing of nonconformity. Complementing these prosocial emotions,
14 natural selection has also produced emotions such as envy and contempt that maximize
15 individual benefit extraction; in turn, awareness of these emotions in others elicits compensatory
16 responses.

17 The above perspective suggests that although contemporary actors may behave in ways
18 that maximize their subjective utilities, *the more that a contemporary setting deviates from the*
19 *ancestral environment, the less likely it is that such actions will be rational from a biological*
20 *perspective* (Tooby & Cosmides 1992). Consider first the case of 'road rage' on Los Angeles
21 freeways. Providing redundant stereotypical exemplars of the dynamics of anger, drivers who
22 suffer transgressions are often furious at, and aggress against, their transgressors (cf. Katz
23 1999:18-83). We have argued that the capacity to experience anger evolved because of the
24 benefits of deterring future transgressions, benefits that only accrue when interactions are
25 iterated. All but the most dimwitted Los Angeles drivers surely understand that they are unlikely
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1 to ever interact again with either the targets of their anger or the other drivers who observe their
2 actions, yet conscious awareness that the freeways are populated by anonymous hordes does not
3 suffice to preclude aggressive response to transgression. This is presumably because the
4 autonomous mental mechanisms at issue are for some reason mistaking the ephemeral social
5 world of the freeway for the stable social world of the village.

6 The proximate causes of this type of (ultimately erroneous) elicitation are clearly evident
7 in a second case, the intense emotions exhibited by modern sports fans. A few simple symbols
8 and a short period of spectating often evoke active, at times violent, solidarity in sports fans. We
9 suggest that this occurs not because the fans are so foolish as to think that they themselves will be
10 the beneficiaries of the many material and social rewards awarded to a winning team, but rather
11 because culturally evolved cues (cf. Boyd and Richerson, this volume) elicit corporate pride and
12 corporate shame in spite of the fans' overt knowledge that they are not really players in the game.
13 The fact that an overweight nearsighted middle-aged man with a heart condition can joyously
14 scream "We won!" while sitting on a couch watching world-class athletes on television is
15 understandable once it is recognized that discrete cues of affiliation (banners, replicas of team
16 jerseys, and the identification of a team with a particular locale) activate autonomous
17 psychological mechanisms responsible for producing corporate pride, mechanisms that evolved
18 in an environment within which both local affiliation and overt symbolic markers committed
19 individuals to in-group coalitions, a world in which there were substantive rewards for
20 advertising one's membership in cooperative ventures (McElreath et al. in press; Boyd and
21 Richerson this volume, Bowles and Gintis this volume).

22 Note that, in contrast to broader descriptions of social preferences, an evolutionary
23 approach directs the investigator's attention to the specific features of the environment that
24 activate the particular emotions observed. We might predict, for example, that, on a per mile
25 basis, road rage will be experienced more frequently when following one's daily commute than
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1 when navigating unfamiliar freeways, since it is plausible that familiarity with the setting is one
2 criterion used by evolved mechanisms in evaluating the likelihood of iterated interactions.
3 Similarly, if, as we suspect, sports teams evoke corporate emotions using cues detected by
4 mechanisms designed to operate in a world of local coalitions, there should be considerable
5 resistance to changing the name or mascot of a team, teams should suffer a drop in popularity
6 whenever they relocate, and fans should be particularly devoted to athletes who refuse lucrative
7 offers to join other teams. Finally, notice that these analyses do not suppose that actors
8 consciously mistake their contemporary environment for a village-like context of iterated
9 interactions and local coalitions (see discussion in Fehr et al., this volume). Rather, our approach
10 presumes that subtle and perhaps difficult-to-identify cues influence the elicitation of various
11 emotions, with the result that emotion-directed actions may sometimes seem to fly in the face of
12 overt knowledge (see discussion in McElreath et al., this volume). This suggests that participants
13 in economics experiments in which the strategic importance of reputation, reciprocity, and
14 punishment are tightly controlled can be expected to demonstrate a range of behaviors, including
15 both those that are rational within the confines of the game and those that are not, but would be in
16 an iterated game (see Fehr et al. this volume, Fehr and Gächter 2000).

17

18 **CONCLUSION**

19 We believe that the longstanding Western tradition of viewing emotions as interfering
20 with rational decision-making stems from a twofold error, namely a) a failure to recognize the
21 nature of the currency (biological fitness) that psychological mechanisms are intended to
22 maximize, and b) a failure to recognize the consequences of evolutionary disequilibrium, the
23 disjunction between many contemporary circumstances and the environment in which our species
24 evolved. When viewed in the context for which they were designed, our emotions, long
25 disparaged as both a reflection of our animality and the source of our irrationality, are thus
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1 exactly the opposite, namely the keys to our complexity, efficacy, and remarkable ability to
2 cooperate.

3

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