HOW EVOLUTIONARY PSYCHOLOGY CAN CONTRIBUTE TO GROUP PROCESS RESEARCH[*]

Joseph M. Whitmeyer

University of North Carolina - Charlotte

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[*]Direct all correspondence to Joseph M. Whitmeyer, Department of Sociology, UNC - Charlotte, Charlotte, NC 28223. E-mail: jwhitmey@email.uncc.edu.

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Abstract:

Conceptions of the human individual lie at the heart of all group process theories. Applying evolutionary reasoning—reasoning concerning what predispositions are likely to have evolved—to those conceptions can make those conceptions more accurate and thus improve theories based on them. I look at, in turn, exchange processes, identity processes, and status processes. For exchange processes, evolutionary reasoning suggests numerous predispositions that would affect exchange, many to cope with the problem of cheating by others and ourselves. In fact, evolutionary reasoning suggests that concerns with our own identity may exist principally to improve our exchange outcomes. Concerning status processes, evolutionary reasoning suggests that awarding prestige must have evolved in the context of exchange, such that the person receiving prestige also incurs performance obligations. These points and others I elaborate lead to several suggestions of areas for future research and numerous specific predictions.

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The development of deductive theory is central in the study of group processes, perhaps more than in any other area of sociology. As the label suggests, group process theories focus on social processes in groups. Nevertheless, all such social processes involve individuals—their behaviors, beliefs, emotions, or perceptions. Correspondingly, some conception of human qualities or tendencies is fundamental to all group process theories, to the way they explain social processes in groups (Whitmeyer 2002). It follows that group process theories will be better or worse as their conceptions of human tendencies are more or less accurate.

That is where the topic of this paper comes in. Evolutionary psychology refers to using evolutionary reasoning to construct hypotheses about human qualities and tendencies. Hence, it is a method for making our conception of those qualities and tendencies more accurate. Thus to the extent that this method is effective, it should be useful to those who study and build theory concerning group processes. My purpose in this paper is to suggest more specifically how that can happen.

Let me say a little more about why we a priori should expect that evolutionary psychology, the application of evolutionary reasoning to conceptualizing human qualities and tendencies, should be helpful. Human qualities or tendencies assumed by group process theories must occur in the human brain. That brain came from somewhere, and I see only three possibilities. It was an accident, it was created as it is by someone or something intentionally, or it evolved through natural selection. I think we all would

agree that the last is the most likely. So let us assume the basic properties of the typical human brain evolved.

The question is, what are the basic properties of the typical human brain? For our purposes, the question is, what predispositions, abilities, or preferences do we have related to social behavior and group processes? It could be that we have none. In that case how we evolved to have a blank slate for a social mind might be an interesting question, but not very useful for us when studying group processes, since we are interested in explaining social processes not the mind.

However, it could be that we do have some innate predispositions, abilities, and preferences that bear on group processes. If we do, then looking for and hypothesizing them should be useful to us. If we can improve our picture of human qualities and tendencies, specifically our conception of how humans operate in social situations, then we will be able improve our models and theories of group processes (Whitmeyer 1994).

As always in science, the question here is one of usefulness. Evolution does not work directly on group processes, but on the genomes that result in individuals, who then engage in group processes. Likewise, evolutionary reasoning will not suggest hypotheses *directly* about group processes, but rather about the underlying assumptions, or models, of individuals we use to construct theory of group processes. Evolutionary reasoning may help us improve those models, make them more accurate, and if so it will be useful. However, it may not, and then we can set it aside and leave it to areas of research where it is more useful.

My purpose here, then, is to discuss ways evolutionary reasoning might be useful to us. We want to improve theories of group processes; we want to be able to predict

more, and to predict more accurately. We want to be able to point to our successful ideas and tell funding agencies they should fund tests of our new ones. Here I discuss how evolutionary reasoning can help us do that. I should point out that use of evolutionary reasoning, as in this paper, very rarely challenges existing group process theories and very rarely suggests they are misguided. Those theories are in good shape! They have been developed to explain and predict empirical data, and have been refined through repeated testing and comparison with empirical results. Typically, evolutionary reasoning at most suggests a modification to a theory that keeps it compatible with those results. More frequently, evolutionary reasoning suggests extensions to a theory, ways of making it more widely applicable, that is, expansion of its scope conditions. In fact, as I suggest in this paper, evolutionary reasoning ultimately may be able to lead us to the construction of a more general theory of group processes, which includes existing separate group process theories, and has correspondingly broad scope conditions.

EVOLUTIONARY REASONING

Let me discuss what exactly I mean by "evolutionary reasoning." "Evolutionary reasoning" refers to reasoning logically what features of an organism might have evolved and what features are not likely to have evolved. A feature might have evolved if physiologically it *could* have arisen, and if once arising it would have enhanced its own existence in the population, through enhancing the reproductive success of the organism that possessed it or her or his relatives. Evolutionary reasoning can take the form of a verbal plausibility argument (see e.g., Cosmides and Tooby 1992), or it can be formal and mathematical, as in the seminal article on social insects by Hamilton (1964) or my article

on human pro-ethnic behavior (Whitmeyer 1997c). I prefer it to be formal or mathematical when possible because I find it more convincing.

When applied to humans, evolutionary reasoning must pertain explicitly or implicitly to the human *evolutionary environment*. That is, the reasoning must occur in the context of the conditions in which prehistoric humans and their ancestors lived. (Thus, for example, we would not hypothesize an innate human—or male human—taste for automobiles.) The reason is that historic humans have not been around long enough that new features are likely to have evolved. It is possible for some to have evolved, but only if strong selective pressures were present (Lumsden and Wilson 1981). The evolutionary environment for humans is existence in foraging bands, groups of probably fewer than 50 individuals, that supported themselves through gathering foods and hunting animals, and moved about from place to place. Most members of the group were kin, or if not kin, "in-laws," so that they shared genetic interests in descendents. Most people spent their whole lives with a single foraging band, in other words with more-or-less the same people. Some people did change groups, although probably not more than once, probably mostly when taking a mate. Groups had relationships with other groups, possibly conflictual and violent, and possibly exchange relationships, either peaceable or coercive, including exchange of mates.[1]

Applying evolutionary psychology to the study of group processes thus means using evolutionary reasoning to improve conceptions of human qualities and tendencies relevant to group processes and in particular theories used to explain group processes. Here I focus on three areas of group processes that are important now and are likely to have been important in the evolutionary environment as well. These are: exchange

processes, including dealing with prisoner's dilemma situations and phenomena such as reputation and trust; status processes; and identity processes, including self-identity and identity of others. My procedure is simply to apply evolutionary reasoning to these processes, or to describe how others have applied it. This will suggest a number of ways evolutionary psychology can contribute to improving our theories of these processes. To get a sense of the fruitfulness of this technique and where this paper is going, the reader may want to look at Tables 2, 3, and 4. They present the specific suggestions and predictions due to evolutionary reasoning that I present in this article.

Before getting started, I should note that all evolved tendencies and predispositions, including those I discuss below, may vary with age and gender. Age and gender are the two fundamental biological characteristics of people relevant for social processes. For example, all known human societies, present and past, have inequalities of power in society associated with those two characteristics (Brown 1991). In the interests of space, and because much has been written elsewhere about especially gender differences concerning many of these tendencies, I discuss their covariance with age and gender very sparingly. However, the possibility of that covariance should always be kept in mind--and indeed, should be investigated empirically when that has not been done yet!

EXCHANGE PROCESSES

Exchange certainly was a crucial part of human life in the evolutionary environment. It is reasonable, therefore, to suppose that humans may have evolved characteristics to facilitate exchange. I suggest two features of the evolutionary environment key for exchange processes were that people tended to be in particular

groups for long periods of time, although often not permanently, and that those groups were small, on the order of 50 to 80 people (Boehm 1999; Maryanski and Turner 1992). Together, those features imply four important characteristics of exchange processes in the evolutionary environment. First, using Emerson's (1981; see also Molm 1997) distinction between reciprocal exchange and negotiated exchange, reciprocal exchange was quite common. Second, generalized exchange, using Ekeh's (1974) and Yamagishi and Cook's (1993; see also Emerson 1981) definition,[2] was prevalent and probably crucial for survival. Third, exchanges often possessed a strong group orientation. Fourth, people did not exchange with corporate actors. Below, I look at implications of these characteristics. To facilitate this, I start by presenting a standard typology of exchange processes. I then consider in turn group orientation, cheating as the crucial problem posed by exchange, and, finally, some preferences crucial for understanding exchange processes.

Types of Exchange Processes

Reciprocal and negotiated exchange—In *negotiated* exchange, the exchange, what the two parties do for each other, is agreed upon before any transfer of goods or deeds takes place. Indeed the two transfers often take place simultaneously. Negotiated exchange is what happens at the car lot or the supermarket. You and the car salesperson arrange the terms of the deal before any transaction takes place. Then you leave with the car and leave them with the money more or less simultaneously. In *reciprocal* exchange, the two transfers are not simultaneous, and one party does something for the other without explicit agreement or guarantee that the other will do something in return in the

future. Reciprocal exchange is frequently the case when couples baby-sit for each other, or when friends host friends for dinner. When one couple wants to go out they ask another couple, and when the second couple wants to go out they ask the first. The couples trade back and forth keeping it fair, but the trade is never simultaneous, and only rarely is it agreed upon before any exchange takes place.

Even in the modern world, much exchange is reciprocal rather than negotiated. In the evolutionary environment, however, virtually *all* exchange at least would have had reciprocal elements. It would be like eating regularly at a restaurant. Eating at a restaurant is mostly a negotiated exchange. When you get the menu and place your order, an implicit negotiation takes place: both parties agree that the restaurant will give you a certain meal and you will give them a certain amount of money. However, there are at least two elements of reciprocal exchange. The restaurant provides a certain quality of product in hopes that you will return in the future. Your waitperson delivers a certain quality of service in hopes of a subsequent tip. Moreover, if you become a *regular*, then the reciprocal elements are likely to become much stronger. The restaurant gives you things like personal recognition, special treatment, perhaps a free appetizer here and there, and so forth; in return you give the restaurant a great deal of repeat business, as well as perhaps generous tips.

In the evolutionary environment virtually all exchanges would have had such reciprocal elements. If A and B exchanging with each other were mutually advantageous once, it is likely that it would be mutually advantageous repeatedly over time. Thus, it would be to the advantage of both A and B to do things—non-negotiated things—in their exchanges to encourage future exchanges and reciprocated good things in their

exchanges. Those non-negotiated elements might be giving a little more than negotiated, or giving higher quality than necessary, or adding social touches to the exchange.

Generalized exchange—Generalized exchange refers to a process such that a person gives and is given to in return, but what the person receives is not contingent on what the person gives (Ekeh 1974; Yamagishi and Cook 1993). This could happen in many different ways, several of which have their own labels and research literatures. One way is *indirect reciprocity* (Alexander 1987): It could be that A helps individual B and another individual, C, helps A. B may or may not have a connection to C. So A may put up B when B is traveling, and then B puts up A's daughter, C, when she is traveling. Or it could be that professor C mentors graduate student A, and subsequently A, now a professor, mentors graduate student B. Recent experimental work on indirect reciprocity by European researchers has generated some attention (e.g., Nowak and Sigmund 1998; Milinski, Semmann and Krambeck 2002). Takahashi's (2000) recent article on generalized exchange also concerns indirect reciprocity only.

Yamagishi and Cook (1993) contrast a particular arrangement of indirect reciprocity, in which people are members of a chain of giving, with one they call *group-generalized exchange*. In group-generalized exchange either the giver or the receiver of the benefit is a group, not an individual. If the receiver is a group (*group-focused* generalized exchange (Ekeh 1974)), there is a further classification into *public goods* problems and *common pool* problems (Sell and Son 1997). In public goods problems, a public good such as collective action (Olson 1965) must be created through contributions of individuals. A solved public goods problem seems equivalent to what Lawler (2001)

calls "productive exchange."[3] In common pool problems, an existing common resource is vulnerable to excessive harvesting by individuals, producing the "tragedy of the commons" (Hardin 1968).

If the receiver of benefits is an individual, with a group being the giver, we have *individual-focused* generalized exchange. Insurance or welfare plans typically fit this description. For example, all the healthy contribute to the care and maintenance of someone who is sick. Then when one of them is sick, she or he receives help from the group. Gifts may also work this way, with individuals getting gifts from the group as a collectivity. One version of individual-focused generalized exchange that has been studied extensively is log-rolling in decision-making groups (e.g., Coleman 1966; Riker and Brams 1973). Note that both group-focused and individual-focused generalized exchange are social dilemmas, in that it is in an individual's interest to free ride and not contribute, but if all free ride, then all end up losing.

It is likely that in the evolutionary environment it would have been advantageous for individuals to participate in generalized exchange. Sharing the bounty from your hunt when you have done well so that you can share the proceeds of others' hunts when they do well—an example of group-focused generalized exchange—is a strategy that is likely to have been advantageous in those foraging bands, even for the very best hunters (Kameda, Takezawa, Tindale, and Smith 2002; Kelly 1995).[4] People get sick, injured, and infirm. Especially in that environment, help would have been critical for survival, so that taking care of the sick and infirm when you are healthy so that healthy individuals take care of you when you are not probably would have been an excellent strategy. Moreover, the small size of the group and the fact that most people remain with the group

a long time would have enhanced the feasibility of generalized exchange. A kindness offered to one group member would have had the opportunity for being repaid later. Everybody in the band could know everybody else and their history of cooperation or non-cooperation. What went around indeed could come around. An additional factor may be that people frequently would have had common genetic interests with the person they were helping, so that even if they never were repaid, the help would not have been a complete loss.

Group Orientation of Exchange

One important feature of generalized exchange is that it is oriented to some group, what I call the generalized exchange group. Evolutionary reasoning suggests that when some exchange group of which a person is a member is important in producing consequences for that person it should become important psychologically to that person. Generally this will be the case when the group *qua* group produces something valuable for its members, often having had to get past some sort of free rider problem to do so. Thus evolutionary reasoning suggests that *the more group-oriented successful exchange processes are, the more rewarding identification and association with the group will be for its members*. This should be revealed in things like positive emotions toward the group and in confirming group identity as a motivation for its members. Again these predispositions are likely to have evolved because being a part of successful groups would have been evolutionarily advantageous for humans.

It is important to note that group orientation is subjective rather than objective. That is because ultimately brain evolution has to work with perceptions and internal

states rather the external world. Thus, what matters is the degree to which a person involved in an exchange process perceives—consciously or subconsciously—an orientation to the group in that process, not the actual, objective degree to which the process is group-oriented. Now in fact for subjective group orientation to have evolved to matter, we should perceive group orientation of exchange fairly accurately.

It is also important to note that group orientation is a variable quality that can be strong with any type of exchange process. Generalized exchange, which occurs in the context of a generalized exchange group, clearly is likely to possess strong group orientation. However, even negotiated exchange may take on group orientation. For example, consider a pair of people who jointly possess a horse. They went into this having worked out a deal whereby they care for the horse on alternative days. This is primarily a straightforward negotiated exchange. Now suppose the horse is a show horse, and one friend grooms and prepares the horse while the other takes it out before the judges. This is still a negotiated exchange, but now there is a possible group product with a group reward, success of the horse in shows, which thus increases the group orientation of the exchange.

Moreover, even within generalized exchange, group orientation is likely to vary in strength. The generalized exchange group will tend to be less salient for indirect reciprocity than for public goods problems, thus group orientation of the former generally will be less (Lawler 2001). This implies that solved public goods problems will produce positive emotion connected with the group (Lawler, Thye, and Yoon 2000), more so than indirect reciprocity does, as Lawler (2001) predicts. Indirect reciprocity also will be less valuable for confirming identification with the group.

The same reasoning also implies that since the salience of the generalized exchange group may vary in indirect reciprocity, the subjective group orientation also may vary with similar consequences. Economists Hoffman, McCabe, and Smith (1996) term (the inverse of) subjective group orientation "social distance," and show that contributions in a dictator game increase with decreasing social distance. Taking another example, if indirect reciprocity occurs within a small chain of people—say, A helps B, B helps C, C helps D, and D helps A—the group orientation will be greater than if the group is much larger and the process more vague—say, you, my professor, help me as your professors helped you and I probably will help my graduate students. This implies that, if successful, generalized exchange in the small chain is more likely to generate positive emotions toward and identification with the exchange group.

Another case is public goods problems versus common pool problems. Salience of the generalized exchange group and thus group orientation is likely to be greater for the former than for the latter. This means that successful solution of public goods problems is more likely than successful solution of common pool problems to generate positive emotions toward and identification with the group.

Reciprocal exchange tends to be more group-oriented than negotiated exchange—the groups in both cases being the exchanging dyad. Part of the reason for this is that the risk of cheating is greater in reciprocal exchange, making trust more crucial, and trust is more likely if the relationship is an ongoing relationship. This leads the partners to focus on whether or not they have an ongoing relationship—orienting the exchange toward the group—on the one hand, and on the other means that successful reciprocal exchange actually confirms the ongoing nature of the relationship. Indeed, reciprocal exchange

often is used as a means primarily of confirming the existence of an ongoing relationship to the partners, rather than of increasing their material satisfaction. Thus evolutionary reasoning suggests that reciprocal exchange should tend to produce greater emotional attachment to the group than negotiated exchange, as Molm, Peterson, and Takahashi (1999) found and contrary to Lawler's (2001) prediction. Note that here is one place where the idea, derived from evolutionary reasoning, that orientation to the group is what generates emotions gives predictions different from Lawler's (2001) proposition that shared responsibility does.

Finally, note that it may be possible to manipulate the degree to which an exchange is oriented to a group. This may be done to increase the likelihood of exchange (see below). However, we also can predict that if group orientation is increased, then successful exchange will produce more positive emotions toward the group and greater satisfaction from confirming group identity in the partners, and failed exchange will produce the opposite.

The Problem of Cheating

The prevalence of opportunities for reciprocal exchange and generalized exchange and the benefits they offered make it likely that we evolved mechanisms for handling reciprocal and generalized exchange situations well. By this I mean that we probably evolved specialized abilities and predispositions to deal with special problems posed by those situations (Cosmides and Tooby 1992; Hoffman, McCabe, and Smith 1996). The chief problems have to do with cheating, by others and by us. In reciprocal exchange, your partner may cheat you by taking more from you than he or she

reciprocates. So your babysitting partners may ask you to baby-sit more often than you ask them, or frequently refuse even when they owe you. They may saddle you with more children, or more problematic children, or children for more hours at a time than you do to them. In generalized exchange, others in the group may free ride and not contribute or undercontribute when it is their time to do so.

As for ourselves, we have the temptation to cheat in the short run although it may hurt us in the long run. When our turn to give comes in reciprocal exchange, we can gain in the short run by refusing to give, or by giving less than would be fair. In generalized exchange, we gain in the short run by refusing to help someone who could use help we could give, or by contributing less than our fair share to the group project, or by doing a poor job when it is our turn to do something for the group. This cheating is likely to be costly to us in the long run because others will react in ways to stop or punish us.

Solutions to the Problem of Cheating for Others and for Ourselves

A number of qualities would help prevent being cheated by others or help us resist the temptation to cheat disadvantageously in reciprocal or generalized exchange. Table 1 shows a list, organized according to whether the quality is a solution for others' cheating or a solution for our own. I discuss each in turn.

Table 1 about here

Emotions—Let us begin with emotional reactions to being cheated or being treated well. For this we can go back to Homans (1974). One of his fundamental

propositions states that if we are punished, especially unexpectedly, we become angry and results of aggression become rewarding to us. If we are rewarded, especially unexpectedly, we become pleased and results of approving behavior become rewarding to us. These emotions help to lessen cheating by others, because they drive behavior antagonistic to cheating others or that perpetuates cooperative relationships. Homans' proposition refers only to when we are being cheated or helped, and indeed those emotions generally would be most useful under those circumstances. However, we may experience them also when we discover others being cheated or helped. They would facilitate lowering cheating by others under those circumstances as well.

Not only do the emotional reactions to which Homans refers encourage others not to cheat us; they also work against our cheating of others. Namely, when we (or others) are rewarded, our happiness may override a more calculated assessment of potential gain in the situation, which in the short run at least might say we should keep our reward and not do anything in return. When we (or others) are punished, our anger may lead us to disregard the short-term cost of carrying out retaliation.

Interestingly, by now the neurology of precisely those emotional reactions has been worked out (Schultz 1997), giving the direct mechanism for his proposition and thereby supporting it. Emotions are not conscious choices; indeed, often they are aroused in the brain before the rational decision making of the prefrontal cortex can occur (LeDoux 1996). Nevertheless, recent research suggests that rational decisions require emotions, that people incapable of experiencing emotions make worse decisions, decisions less advantageous for themselves, than do normal people (Damasio 1994,

1999). Neurological evidence makes it clear that emotional reactions have a strong innate component.

We should note that not just specific emotions but also specific behavioral tendencies that follow on from emotional reactions to being cheated or not being cheated may have evolved and may be innate predispositions. In the evolutionary environment, principal recourses to being cheated would have been direct confrontation, cutting off malefactors from future exchange, and telling others in the group what happened. While we have additional recourses now, such as through formal institutions like the police, we still use the same informal ones a great deal.

Reaction to unexpected rewards or punishments is far from the only area of emotions important for exchange and exchange relationships. In the past few decades in neuroscience and related psychology there has been a mushrooming of research and theory concerning emotions, some of it fairly accessible in works by Damasio (1994, 1999), Lazarus (1991), LeDoux (1996, 2002), Panksepp (1998), and Kagan (1998). All of this work is informed by an evolutionary perspective; one tool in theory-building is evolutionary reasoning, the assumption that predispositions for brain physiology and their consequences evolved and were advantageous. A few sociologists, notably Jonathan Turner (2000, 2002) and Smith and Stevens (1997, 2002) have adapted some of this work into sociology, but thus far it has had less effect than it should have—and than it will.

Let me mention two points important for exchange. Smith and Stevens (2002) have adapted Panksepp's work on effects of peptide neurotransmitters for attachment, and have even drawn out implications for phenomena such as solidarity. Kagan (1998) argues strongly that research evidence points to emotions being much less general than

we suppose—for example, that "fear" refers to a wide variety of responses contingent on the external and internal situation. Thus he would have us use a much more specific categorization of emotions, probably according to the outcome toward which they appear to be directed. Many of those outcomes for humans will be exchange-related, which makes this approach likely to be valuable for research into exchange processes.

Loyalty—Another quality with an emotional aspect is loyalty or commitment. Loyalty is a preference for maintaining a pre-existing reciprocal exchange relationship, which can outweigh the lure of gains to be made by switching to a more profitable relationship. Lawler and Yoon (1996, 1998) clearly created loyalty in members of exchange networks. Loyalty typically is accompanied by positive emotions, which again is an indication that loyalty is likely to be an inherited quality. The evolutionary advantage of loyalty is that it would tend to keep us as good long-term or reciprocal exchange partners, which would make sense in the evolutionary environment where people had continued opportunities to exchange with the same people. There, opportunistic switching of exchange partners could well be a poor long-term strategy as it would curtail possibilities for long-term gains from reciprocal exchange relationships.

I noted above that one feature of the evolutionary environment was an almost complete absence of corporate actors. That feature is important here, for as a result we feel loyalty not only to individuals and small groups, which often may be advantageous, but also to corporate actors, even large corporate actors. This entails the costs of loyalty but may entail none of the gains. Thus people are frequently found to be loyal to an automobile make, their "alma mater" university (which is *not* their mother!), sports teams, a bank, a department store, and so forth. Some corporate actors do try to

encourage the feeling that there is a long-term reciprocal exchange relationship. The car company Saturn, for example, will do things like hosting a day for Saturn owners at a local amusement park. Department stores have special sale days for holders of their charge cards.

Sensitivity to unfairness—I suggest that cheating, social unfairness, and social injustice are essentially identical, at least in how we mentally process their occurrence. Sensitivity to cheating or unfairness has two elements to it, ability to detect unfairness and an emotional reaction to unfairness. With experimental support, Cosmides and Tooby (1992) have suggested we have an evolved, innate ability to detect cheating—again, an ability to detect unfairness. However, we go beyond detecting unfairness. We also experience emotion; we get angry when others are unfair and feel guilty when we are unfair (Jasso 1993). Once again, this emotional aspect makes it highly likely that sensitivity to unfairness is an evolved trait, as indeed suggested by several researchers (Cosmides 1989; Fiske 1991; Turner 2002). Sensitivity to unfairness would have had advantages in the evolutionary environment—indeed, does in our own—by tending to keep all types of exchanges, negotiated, reciprocal, and generalized, mutually beneficial. It would work to keep ourselves from cheating others, to keep others from cheating us, and to keep third parties transacting between each other from cheating each other.

Our emotional response to unfairness manifests itself, I suggest, in our asymmetric response to gains and losses. It is a well-established finding that losses affect people more than gains; people are more troubled by a given loss than pleased by a gain of nominally equal amount (Tversky and Kahneman 1981). Plausibly this is because in the evolutionary environment loss often would have been the result of being cheated in

some way, thus excessive aversion or reaction to loss would have helped prevent being cheated.[5]

Note that this should not be just a self-serving bias aimed at cutting our losses and keeping our winnings. It should apply to third party situations too. Thus we can predict that third party reactions will be stronger to seeing someone receive less than promised than to seeing someone receive more than promised. Moreover, we can predict this difference in reaction will be greater in a non-zero sum situation, in which being overbenefited does not result in someone else's being underbenefited. In a zero-sum situation, third parties should be bothered also by someone's being overbenefited since it comes at someone else's expense.

One last note and prediction concerning sensitivity to cheating proceeds from the fact that cheating necessarily involves more than an exchange process; it has to do with the setup of that process—arrangements made and expectations formed. This means that whether or not a situation invokes our sensitivity to cheating depends on the framing of that situation, as Cosmides and Tooby (1992) found for detection of cheating and Tversky and Kahneman (1981) found for loss aversion. We can make further predictions explicitly about justice, specifically that framing exchange processes in terms of justice will affect behavior. Take the ultimatum game, an exchange interaction recently much studied in experimental economics. This is a two-person game in which the first party proposes a division of money and the other either accepts the division, whereupon it occurs, or rejects it, whereupon neither gets anything. Typically, the proposer exploits the situation, presenting a division in her or his own favor. Suppose, however, that the money is not just an award from the experimenter but instead is *earned* in some way. I

suggest this will lower the inequality of proposed divisions, and for equivalent inequality it will result in stronger emotional reactions from the second, cheated party.

Keeping the balance sheet of exchange—Reciprocal exchange makes mental demands that negotiated exchange does not, in that both parties need to remember who owes whom and what or for what. Obviously the one who owes needs to remember, and the one who is owed is less likely to be cheated if she or he remembers as well. Moreover, one advantage of reciprocal exchange is its flexibility. If A gives X to B it is not necessary that the next transaction be B giving the equivalent of X back to A. A could give still more to B, B could repay A only partially, B could overcompensate A leaving A the one who owes B, or perhaps some other possibility.

Such flexibility augments the usefulness of reciprocal exchange, but it also increases the difficulty of keeping track of the exchange situation. Evidence suggests that in fact we do keep a sophisticated account of the status of reciprocal exchanges, which may not always be explicit or fully conscious (Kollock 1991, 1993). The fact that we do this monitoring and accounting, even automatically and unconsciously, and its obvious benefits mean that it is likely to be an innate predisposition. Note that keeping the balance sheet of exchanges not only works against cheating by others, but also by ourselves. It lessens the chance that we will sabotage that exchange relationship mistakenly, or damage our reputation with others.

Identifying the generalized exchange group—In the evolutionary environment, knowing "us" and "them" would have been important, at times a life-or-death matter. "Us" means a generalized exchange group, a long-term group of cooperation, a group in which you can give help and expect that at some point you will be repaid somehow.

Social psychologists have known for a while now that we automatically classify people into "in-group" and "out-group" (Bruner 1957; Devine 1989), and that the classification affects subsequent perceptions and behaviors (Sherif, Harvey, White, Hood, and Sherif 1961; Tajfel 1982; Vine 1992). Given that conflict between groups is likely to have been a chief motor of development for the human brain (Alexander 1987; Lovaglia, Barron, and Houser 2002), it is not surprising that in-group out-group classification would be quick, automatic, and important. Yamagishi (1998; Yamagishi, Jin, and Kiyonari 1999) has emphasized that this classification is not just capricious, however, but in fact is aimed at locating ourselves in a generalized exchange group. Nowadays, and perhaps in the evolutionary environment as well, we may belong to many different generalized exchange groups, whose memberships may or may not overlap.

Attending to exchange reputation—Exchange reputation, what others say about the trustworthiness in exchange of a potential exchange partner, is important for exchange, as many scholars have noted (e.g., Klein 1997; Milinski, Semmann, and Karmbeck 2002; Rapoport, Diekmann, and Franzen 1995; Raub and Weesie 1990; Sigmund, Hauert, and Nowak 2001; Wright 1994). Note that this is separate from might be called someone's *asset reputation*, what others say about what a potential partner can bring to exchange, such as material goods or abilities. I discuss asset reputation below. Attention to others' exchange reputation will help prevent being cheated by negotiated and especially reciprocal exchange partners. In negotiated exchange, you can be cheated, for example, if what you are getting is misrepresented to you. You can lessen such a possibility by paying attention to the exchange reputation of your partner. However, exchange reputation will be more crucial in reciprocal exchange given the heightened

vulnerability of whoever gives first. Graduate students choosing an advisor should care whether Professor So-and-so's students get their theses done, and whether Professor So-and-so has a reputation for helping her students get jobs or not.

I should note that exchange reputation is broad and nuanced. A person may have a reputation concerning material exchange—about the extent to which the person delivers on goods promised. That is akin to but may be different from reputation concerning service exchange, the extent to which a person delivers on service promised. Finally, a person may have exchange reputation concerning various types of social exchange, such as how polite the person is, how the person responds emotionally in interactions, how the person reciprocates social gestures of various sorts, and so forth.

If exchange reputation matters for exchange, then we should care about our own exchange reputation, and generally we do. A concern for our own exchange reputation will help to keep us from cheating others for it adds to the cost of cheating. In other words, if we cheat someone, we can expect a loss of future exchanges with that person. Moreover, we can guess that person will tell others, thus we can expect others to become less likely to exchange with us as well. However, concern for our own exchange reputation adds a more immediate cost to cheating—we care that others think we are bad exchange partners, even if we do not anticipate exchanging with them. That concern also will finesse any myopic tendency to underestimate the likelihood we will want to exchange with others.

It is likely that attending to exchange reputation, both our own and that of others, is an evolved predisposition. Caring about exchange reputation would have the same advantages in the evolutionary environment as it does now, and those who attended to

exchange reputation on the whole would have done better than those who did not. The fact that attention to exchange reputation is so automatic with us, and that exchange reputation problems are accompanied by emotions (Frank 1988; Trivers 1971) suggests too that these concerns are innate.

Moreover, a recent argument by Burt (2001) may help to explain the intensity of our concerns about reputation. Burt contrasts reputation processes in closed versus open groups. He shows that in closed, smallish groups reputations have a tendency to become set or even polarized, for good or for bad, without necessarily being accurate. Essentially what happens is that often a very limited amount of information gets passed around to all and by all group members. The repetition of this information makes it seem more certain than it warrants. Where groups are not closed, that process does not occur, so that information that is tentative remains tentative, plus a person is more likely to receive information from diverse sources.

What is especially relevant here is that, as noted above, people's groups in fact were closed and smallish in the evolutionary environment. By Burt's argument, this would have heightened the importance to you of implications for your reputation of both your own and others' behavior. This reason is that even a tentative impression easily could get turned into a set reputation. My own field research on a fairly closed community in southern Mexico showed this kind of concern by women with their sexual reputation. If someone—typically, a drunken man—made a derogatory remark about a woman that came to her attention, she was likely to take him to the local court, for the sole purpose of getting him to publicly recant his suggestion (Whitmeyer 1993). The implication here is that even a slur by a drunk with no evidence could be damaging for a

reputation if left unchallenged. Note that Burt's argument would hold for asset reputation—as in the Mexican example—as well as exchange reputation.

Finally, it warrants mention that besides trustworthiness, other behavioral propensities of exchange partners and potential partners are useful to know and so also are a part of exchange reputation. Important are qualities like people's trustingness, their toughness, and how they react to cheating. So we pass around information like so-and-so is gullible or very cautious; someone is a tough negotiator, or "he'll just give away the store;" she has a "short fuse," or she's "amazingly tolerant." Nevertheless, I concentrate on trustworthiness since it almost certainly is the most important aspect of an exchange reputation.

Monitoring, reporting, and sanctioning others' exchange behavior—Most of what I have mentioned so far has been mental qualities, with behavioral implications. However here are three behavioral predispositions that would facilitate the functioning of exchange of all three types in small, long-term groups. I have suggested above already that we monitor our own reciprocal exchange relationships—keep the balance sheet—but here I suggest we monitor directly people's prosocial behavior or lack thereof more generally. Moreover we report it to others. Others will tend to be interested in it. And then alone, or often in coordination with others, we sanction people for the prosocial behavior or especially for its lack.

Let us say more about others' interest. Basically, here we are talking about an evolved predisposition for gossip (Runciman 2000). In the evolutionary and every other social environment, we benefit by wanting information about the trustworthiness of anyone who is a current or possible future exchange partner. Since any given person is

likely to be neither party nor witness to many instances of helping, group members benefit by sharing information with each other about cooperation or non-cooperation of other group members (Burt and Knez 1996; Klein 1997). Thus faculty talk about another professor in their department: "Has she *ever* been to a department meeting that didn't concern something affecting her directly?" Again it is likely that we have an innate drive to participate in this collective accounting, which is an important part of gossip.

Note that we should want to participate in gossip completely. It is significant that we have the urge to tell others about those who cheat or attempt to cheat us especially while we still are angry. Again, emotional reactions are a sign that the accompanying behavior may be preconscious and innate. More generally, passing information along about people frequently will be beneficial, if only because that is likely to stimulate the flow of further information about them, either confirming what we know already or challenging it.

Whether or not people will do monitoring, reporting, and especially sanctioning of others' prosocial—or not—behavior often is called the second-order free rider problem. As Heckathorn (1990, 1993) has shown, under some circumstances it may be profitable even in the short run to engage in such second-order cooperation. However, a study recently reported in *Nature* suggests that these behaviors need not be calculated and may be oriented to the long term. Researchers put people in a type of generalized exchange and found them willing to pay for enforcement of cooperation, with resulting levels of cooperation greater. Participants were moved around from group to group so there were no reciprocal exchange elements in the situation, no repetition that could allow trust to emerge. The mechanism for participants' behavior apparently was emotion;

participants experienced anger that other participants did not cooperate, which led them to contribute to punishment, getting the group past any second-order free rider problem (Fehr and Gächter 2002).

It is interesting to compare those findings to Molm's (1997) finding that people may be reluctant to use punishment to try to bring about more prosocial behavior on the part of exchange partners. One difference may be that Molm's experimental participants were engaged in reciprocal rather than generalized exchange. In reciprocal exchange, while punishment is being used outcomes clearly are suboptimal (Whitmeyer 2001), plus their use may spur retaliation that will degrade the relationship further or even ruin it (Molm 1997). Neither of these problems is likely to be as acute with generalized exchange. If A chides B for not helping her, then when A needs help again B may be angry enough at A to refuse again. However, if A chides B for not helping C, then when B has a chance of helping D it is unlikely that B will refuse due to anger at A.

Using ostracism as negative sanction—I suggest also that are predisposed to use a particular sanction on people who fail to be cooperative, namely, ostracism. To ostracize someone means to exclude that person from exchange processes, both exchange relationships and generalized exchange. Especially in the evolutionary environment, ostracism almost certainly was very important, both a punishment and as a safeguard, a sort of inoculation, for the group (Boehm 1999). I suggest therefore that we have an innate tendency to use ostracism and partial ostracism as a means of sanctioning. Moreover I suspect that part of the innate package is a predisposition to sanction negatively those who violate the ostracism or partial ostracism and cooperate inappropriately.

Social exchange heuristic— Kiyonari, Tanida, and Yamagishi (2000) suggest we have a predisposition to treat transactions that are not parts of on going exchange relationships as generalized exchange (see also Hoffman, McCabe, and Smith 1996). They call this a "social exchange heuristic," and propose that it is innate. Consider the appearance of a generalized exchange situation. Either we are making an outright gift, or at best it is a one-shot transaction with the potential for cheating such as a one-shot Prisoner's Dilemma. By a one-shot transaction, I mean a transaction in which both parties know there is only one interaction with the given partner. For example, at a yard sale someone would like to buy something with a personal check. In the evolutionary environment, almost all helping or one-shot transactions with potential for cheating would have been generalized exchange decisions. Because the group was small and members tended to be with the group for an extended period of time, the maxim "what goes around comes around" generally would have been true.

Thus, in the evolutionary environment, a predisposition to treat helping and one-shot transactions as if generalized exchange decisions—a social exchange heuristic—would have been advantageous.[6] The social exchange heuristic would have helped keep a person from cheating others to the person's long-term disadvantage. In the modern environment, this has the consequence that we will tend to be more helpful and cooperative than is apparently rational or benefit-maximizing. We will tend to give as if what goes around comes around even if there is virtually no chance that it will come around. Now it may appear to us as if there are many cheaters and many mean acts. However, I submit that the proportion of those is less than we think, and that we are just especially sensitive to them, as noted earlier (Cosmides and Tooby 1992).

Evaluation of others' worthiness—Suppose a person meets the nominal membership criteria of some generalized exchange group of ours. A key remaining question is whether the person is a full-fledged member of the group and likely to remain so, or if the person is ostracized to some extent, or likely to cease being in the group. If the person is a member of the group in good standing, and likely to remain so, then cooperation makes sense, for we are likely to get paid back by someone at some point, and if we do not cooperate then we may suffer in the future. However, if the person is in fact not a member in good standing of the group, or not likely to remain a member, then we face an increased risk that no one will repay our cooperation. In fact, if the person is ostracized actively we may be punished for not cooperating with the ostracism. So in helping or cooperation situations, especially that are not simply negotiated or reciprocal exchange, we may have an innate tendency to evaluate our partner's *worthiness*. In other words, we evaluate whether the other person seems likely to be a member in good standing of the generalized exchange group or not, and to help or cooperate or not on that basis. Evaluation of worthiness may affect reciprocal exchanges somewhat as well. If our partner is worthy, that is, a full-fledged member of some generalized exchange group of ours, then it is less likely that the partner will cheat us and that we will cheat the partner. That is because cheating by either person may damage that person's standing with the group.[7]

Concern with our own and others' identity—In what is perhaps a deepening or generalization of the importance of reputation, I suggest that problems of cheating in the various types of exchange led to a concern with identities, of others in the group and of ourselves. Psychologists have noted a basic human tendency that they call the

fundamental attribution error—that we tend to overascribe behavior of others to personality and intrinsic qualities of the person (e.g., Nisbett and Ross 1980). However, from an evolutionary standpoint this may be a useful trait rather than an error. I suggest that this labeling of others is not purely an attempt to explain what happened, but is in fact a type of social control, especially as that information gets passed along. If a person is generous or mean in a particular situation, we perceive and pass along that that person is "generous" or "mean." Those labels will have consequences for the person's future attempts to be involved in exchanges. Consequently, the person in all situations will work to get advantageous labels and avoid disadvantageous labels. In other words, from the standpoint of our own self-interest, what matters is whether a person cooperates with us or not, regardless of extenuating circumstances. Hence, for purposes of getting cooperation, it is likely to be advantageous to attribute identity irrespective of circumstances. Moreover, if people are concerned with each other's identities—so they know whom to include in negotiated, reciprocal and generalized exchanges—then it will be advantageous for us to be concerned about our own identity. I return to identity more fully when I discuss research on identity processes.

Social intelligence—This is a faculty identified and labeled by Toshio Yamagishi (Yamagishi, Kikuchi, and Kosugi 1999). Social intelligence is the ability to discern the intentions of others in exchange, namely, whether or not they are likely to cheat us. Information about reputation will feed into this inference, as will information from monitoring a person's past exchange behavior with us. However, our social intelligence also is likely to process all sorts of cues about the prospective partner, as well as information about the situation. Yamagishi (1998) suggests that the more people have to

gain from entering new exchange relationships, the more they will try to develop their social intelligence.

Trust ability—Complementing our social intelligence would be a fifth quality, the ability to trust appropriately, which we might call *trust ability*. Trust amounts to taking a chance on a partner in a reciprocal exchange situation. Being skillful at trust would be beneficial since trust pays off if the partner comes through but not if they do not. Yamagishi (1998) has suggested, based on a variety of results, that in identical situations some people are more likely to place trust than others. His results also suggest that people who are more willing to place trust also tend to be higher in social intelligence (Yamagishi, Kikuchi, and Kosugi 1999). Thus, trusting ability amounts to trusting to the amount appropriate for the situation and for our level of social intelligence—being cautious when we are not very good at detecting likely cheaters and so forth.

Table 1 summarizes the predispositions suggested by evolutionary reasoning for dealing with the problem of cheating by others and by ourselves that I have discussed.

Table 1 about here

Other Relevant Motives: Prestige and Wealth Preferences, Risk aversion, Sympathy

Researchers generally acknowledge and accept key preferences that motivate exchange. This makes evolutionary reasoning less necessary and less valuable here. For example, if group process theories recognize that people value prestige, whether or not

valuing prestige is an inherited predisposition may not matter to theory development. However, it is worth mentioning preferences, if only because they obviously are crucial to exchange, and occasionally questions may arise relevant to their innateness, such as concerning how malleable they are.

Prestige can be an important preference for exchange and for other group processes, especially status processes (see below). By *prestige*, I mean precedence or rank in a group. Virtually all social animals have a preference for higher prestige over lower prestige (de Waal 1996; Wilson 1975), suggesting the preference is an inherited predisposition. Social scientists have long recognized that preference in humans and its importance (e.g., Veblen 1918 [1899]). This preference in fact can confound experimental exchange studies in situations in which a desire to do better than others conflicts with a desire to do well materially for oneself.

Clearly related to desire for prestige is a *desire to impress others*, to get other people to think about us in ways advantageous for us (Goffman 1959; Tooby and Cosmides 1996; Veblen 1918 [1899]). We will benefit in exchange if we can create a favorable reputation among others for what we have to offer, what I called above our *asset reputation*. Specifically, we want to impress others with the resources we have to offer in exchange and exchange relationships—resources, abilities, time, devotion, and so forth. We will want to impress directly a person with whom we want to exchange, to get the best deal possible out of the exchange, or indeed, to get to exchange at all. The desire to impress others also relates to identity processes (see below), since what others think about us can confirm what we would like to think about ourselves.

Related to both of the above preferences, for prestige and for impressing others, is hostility to rivals (Tooby and Cosmides 1996). This is a desire to eliminate rivals, along with associated negative emotions. Note again that the emotional aspect of this trait suggests it is innate. Moreover the evolutionary advantage is obvious: in any exchange situation, your position is worsened by the entrance of someone who can offer what you are offering or perhaps better than what you are offering. Correspondingly, your exchange position will improve if you can get rid of the rival.

Preference for *wealth*, or for having more material of value, is the quintessential preference assumed by economics, the social science that has focused most on exchange. It is the operational assumption of almost all exchange studies in sociology (e.g., Cook, Emerson, Gillmore, and Yamagishi 1983; Markovsky, Willer and Patton 1988; Molm 1997). Ironically, it is one important preference that possibly is not innate, not evolved. Instead, it may be derivative, a by-product of the desire for prestige (Mithen 1996; Veblen 1918 [1899]). Moreover, on the opposite side, in some groups, high prestige is associated with lower wealth, (Smith and Bird 2000).

Risk aversion is an element in all reciprocal exchanges. A reciprocal exchange involves placing trust, which entails risk. A person's preference for risk, or degree of risk aversion, therefore will affect the person's participation is such exchanges. For example, we can predict that, holding social intelligence and trust ability constant, the greater a person's risk aversion is, the less likely that the person will engage in reciprocal exchange. However, if a person already is involved in an exchange relationship, the greater the person's risk aversion is, the less likely the person is to explore alternative, possibly more beneficial exchange relationships (Flache 2001). Whether our risk

aversion in reciprocal exchanges is the same as our risk aversion generally, or whether we have a level specifically of *social* risk aversion is unclear at this point, and will need future research. However, there is strong evidence that risk aversion has a genetic component, and varies between people, and for a given person over time (Kagan 1998; Konner 1990; Rode and Wang 2000).

Sympathy is an emotional state brought on by another person's plight, coupled with a motivation to help that person. Its emotional aspect indicates we probably have an evolved predisposition to sympathy. The evolutionary reasoning behind this is that giving help to people who are in trouble or having problems, especially if that situation is temporary, will tend to be advantageous for reciprocal and possibly even generalized exchange. Such people will tend to value help more than normal, thus the debt they incur will tend to be less than the cost to the helper.

Implications for Research on Exchange Processes

What I have done so far is to present a more complicated portrait, or model, of the individual human actor than we typically work with. This portrait is derived from evolutionary reasoning, together in many of its aspects with empirical findings. I am not done yet, for I have only discussed those aspects of people especially relevant for exchange processes. However, it seems appropriate to stop here to see how we can apply this more complicated model.

Let me mention two strands of work of which I am aware. One is work on exchange in networks, in which the primary question has been the effects of network structure on ability to obtain resources. The other is social dilemmas research, conducted

somewhat by sociologists, but also by economists, political scientists, and biologists. There the primary question has been what conditions affect cooperation. Here there are two foci: the model of the human actor—what are people really like—and on institutions, rules or practices that affect resolution of the dilemma, such as sanctioning systems.

Over several decades, theory and research on exchange networks has made progress. However, with few exceptions, the theory and its operationalization in experiments have made use of a limited model of the actor. Recall that what evolutionary psychology does, what evolutionary reasoning contributes is a better, more accurate model of the actor (Kanazawa 2001). Now the model of the actor used by most theory and research concerning exchange networks is simply that network members prefer more resource—convertible into money—to less resource, and act on that preference (e.g., Markovsky, Willer, and Patton 1988; Molm 1997). As I said above, evolutionary reasoning says that too—but it says much, much more. I suggest at this point that great strides could be made in the theory by using the fuller model.

This can be done only by expanding the conditions of most experimental exchange networks. What we want are conditions that make the fuller model applicable. Generally speaking, this means using reciprocal and generalized exchange more, giving participants more choice, and reducing or allowing them to reduce their naïveté. Note that such expanded conditions correspond more to conditions of most exchange in the evolutionary environment, as well as, I would argue, in our own.

Let me get more specific, starting with choice. In most exchange networks, not exchanging when given the opportunity is either impossible or completely stupid. In both the evolutionary and current environments, however, many exchange resources—work,

time, and money, for example—can be put to alternative, self-benefiting uses.[8] Most exchange networks do not allow actors to choose or change their networks but impose a single network structure into which actors are placed. Again, in both the evolutionary and current environments, most often actors in exchange networks can choose their networks and change their networks, even if they cannot change their position in the network. For example, house buyers and sellers can choose and change their middlemen—their real estate agents. Graduate students can choose and change their advisors. Allowing more choice will give greater scope for effects of emotion, of loyalty; it will provide reason for attention to things such reputation, worthiness, and so forth.

Let us turn to the naïveté of participants in studies of exchange in networks. The situations in which these participants find themselves are unfamiliar to them in two related ways. First, participants do not know or at least are not sure what to expect out of their exchanges. Second, almost always participants have not learned, studied, or been taught strategies for their situation. In most exchanges in both the evolutionary and current environments, people have an idea, often quite specific, what they will get out of the exchange. Moreover, they have an idea about what to do in the exchange situation. If it is a new exchange for them, they will have observed others in those exchanges, received advice from others concerning them, perhaps read books directly or indirectly on the topic. If it is an exchange they have experienced before, they are likely to have reflected on it later, perhaps discussed it with others, perhaps dreamed about it! My guess is that not knowing what to expect is likely to reduce participants' emotional reactions to missing, meeting, or exceeding expected outcomes. This in turn is likely to affect their exchange behavior in subsequent exchanges. Participants' naïveté concerning

strategies will limit applicability of conclusions to natural situations. Moreover, since many such strategies will involve cooperation with others, perhaps coalition building (see, e.g., Whitmeyer 1997a, 1999), aspects of the model that facilitate such cooperation do not come into play.

Let me present a slightly different angle on these points. Compared to most other animals, humans are learners. That is, we are less likely to have instant, innate responses to situations, but we will learn what to do over time. Or rather, our innate response is to learn. Many aspects of the model I have presented so far involve learning of some sort—about others, about what others think about us, about strategies and so forth. This means that frequently we may not have an instant optimal response—such as we do with sudden danger—but rather a learning response, perhaps grossly suboptimal at first but improving. Thus, one-time one-to-two hour studies with fairly naïve participants may yield results quite different from identical studies with more experience or learning.

Finally, studies of exchange in networks should devote more attention to reciprocal and generalized exchange. Reciprocal exchange—again, where the give and take are not negotiated before or as they occur—has been studied almost exclusively by Linda Molm and her students. Molm, Peterson, and Takahashi (1999) suggest that the type of exchange does affect outcomes. Certainly, the EP model I have been describing would predict so, especially when the situation allows aspects of the model for dealing with reciprocal exchange to come into play.

For example, we could develop and test theory for effects of reputation on the effects of network structure. Suppose actors spend a small amount of time in networks of a predetermined structure, in which they engage in reciprocal exchange. Subsequently

actors choose new networks to join. What effects does information concerning actors' exchange behavior—reputation—have on the ability to gain resources? We could look at how such information is spread, what circumstances produce ostracism, and a variety of other effects.

Similarly, we could study generalized exchange within network structures. One way would be to limit exchanges for each grouping of actors in a network to a single-shot, non-negotiated exchange—more like a gift, really. Then actors join new networks. Again, we can look at effects of reputation, identity, social intelligence, trusting ability, and so forth on ability to obtain resources.

Sociologists also can study social dilemmas profitably, making use of an actor model informed by evolutionary psychology. Some sociologists have studied social dilemmas, notably Jane Sell and her students (e.g., Sell 1997; Sell and Son 1997) and Toshio Yamagishi and his students (e.g., Yamagishi 1998; Kiyonari, Tanida, and Yamagishi 2000). However, economists, biologists, mathematicians, and political scientists have made much of the recent running in this area. Sociologists' interest and expertise in so many of the factors affecting behavior in social dilemmas and thus outcomes (see Table 1) should position us to make valuable contributions. Moreover, sociologists need to understand social dilemmas since they are crucial to many phenomena in which we are interested, such as collective action, social movements, solidarity, and social order.

For example, we can look at effects of preferences on behavior in social dilemmas, preferences I mentioned above such as for material gain, prestige, reputation, identity, and risk. Some work here has been done on gender differences, including

recently within sociology by Brent Simpson (2001). However, the surface has barely been scratched. Emotions undoubtedly can be an important part of the process in behavior in social dilemmas, and increasing understanding of emotions will help us develop theory concerning dilemmas. One question concerns use of punishment. As mentioned above, Fehr and Gächter (2002) found people willing to pay for punishment, which in turn produced greater cooperation in a dilemma. Molm (1997) found people reluctant to use punishment in reciprocal exchange and found it ineffective when they used it. At one level this makes sense: use punishment only when it works. However, two deeper questions are, why did it work in one situation and not in the other, and how did people, in some sense at least, know?

The importance of both exchange and asset reputations in social dilemmas has been developed theoretically and shown empirically. However, here too many interesting questions remain. For example, in experimental studies that give reputation a potential role (usually reputation concerning trustworthiness in exchange), the mechanism typically is provided for participants (e.g., Milinski, Semmann, and Krambeck 2002). However, following other scholars I suggested above that people naturally care about others' reputations, and naturally do things necessary for reputation like monitor and report. So if the mechanism is not provided externally, under what circumstances will people undertake these activities? How long does it take, and how do they go about doing it? Does the process vary for the two kinds of reputation, reputation concerning assets and reputation concerning trustworthiness in exchange? Moreover, different mechanisms of reputation may have different effects. Then we can ask the extent to which people create or use the optimal one for their situation.

In fact, in natural situations people frequently have developed formal reputation systems, such as rating schemes, certifications, and awards (see, e.g., Kollock 1999), which can vary in key qualities such as toughness, how hard it is to get the award or a top rating (Whitmeyer 2000). Obvious questions are: What does it take for people to develop a formal reputation system? Do they produce one of an optimal toughness? These questions concern the building of a common type of social institution, and should be of interest to sociologists.

In both reciprocal and generalized exchange, we need more theory and research concerning the internal counterpart of reputation, identity. We need to find out where identity already is playing a role, the circumstances that affect the role it plays, and what its effects can be. For example, what part does identity play, if any, in the loyalty that Lawler and Yoon (1996, 1998) found? What part, if any, does identity play in use of punishment? In those situations, what can affect the role identity plays? For example, if the experimenter or other participants put labels on the behaviors, such as "mean" and "nice" does that intensify identity processes with behavioral effects?

On that note, I now turn fully to identity concerns, leaving the area of exchange processes proper. Table 2 summarizes the principal research suggestions and predictions produced by evolutionary reasoning in the area of exchange that I have discussed.

Table 2 about here

IDENTITY PROCESSES

Identity concerns are the focus of a number of perspectives within social psychology and the study of group processes, including symbolic interactionism, identity theory, social identity theory, and affect control theory. These perspectives recognize that our perceptions of who others are, who we are ourselves, and who others perceive that we are matter to us.

Two of those perspectives, identity theory (see Burke 1991; Tsushima and Burke 1999) and affect control theory (see Heise 1977, 1979; MacKinnon and Heise 1993; Smith-Lovin and Heise 1988), are formalized control theories; their central mechanism is roughly like this. Individuals have a certain standard, a conception of how the social situation they are in truly is. They perceive what is happening in their social situation and try to fit it to the standard, taking action to do so if necessary. Thus if something happens to deflect perceptions away from the standards, an individual will attempt to adjust things, to change the situation or change their perceptions, to restore a correspondence between the situation and their standards. So for example, if I am unduly harsh to my son that would not accord with my standards for a father. So I might take a variety of actions to bring standards and perceptions back into line. I might follow by being very nice to him, or being very nice to his sister, or even denigrating him so that my earlier actions were appropriate for *that* manner of son.

Evolutionary reasoning implies that if identity concerns and, possibly, related control mechanisms are characteristic of all human individuals, then they are innate, evolved. Moreover, the close link of these processes with emotions, explicitly laid out in affect control theory (e.g., Heise 1977), reinforces that implication, since much of the

structure of emotions appears to be set genetically (LeDoux 1996; Panksepp 1998; Turner 2000). If control processes are evolved, then we can apply evolutionary reasoning further to these processes, asking why they would have evolved, and exactly what is likely to have evolved.

Let me reiterate a suggestion made earlier, namely, that identity concerns and associated mental mechanisms evolved to cope with exchange processes. I suggest that our concern with our own identity is an evolved mechanism for being members in good standing of generalized exchange groups, and for being desirable partners in reciprocal and negotiated exchange. I suggest our concern with identities of others evolved to combat the problem of defection or cheating, especially in generalized and reciprocal exchange.

Concerning self-perception, one point is that members of generalized exchange groups should possess certain traits, and so we should too. These traits are likely to include honesty, truthfulness, kindness, and generosity, and perhaps others more specific to the group, including perhaps group identity. Others' perceptions should be critical in this process, since ultimately it is others' perceptions and not our own that decide whether or not we are in the generalized exchange group. Thus "taking the role of the other" is key. The ultimate question is "Will they want me on their team?," and we want to be the kind of person that makes the answer "yes." It works similarly for reciprocal exchange. We are concerned with appearing equitable enough that others will want to continue reciprocal exchange relationships. For reciprocal and negotiated exchange especially, we also should want to appear valuable to others, as though we have something to offer.

Control theories also describe how we deal with perceptions of our external social situation. I suggest that these mechanisms they describe evolved to keep tabs on our social environment so that we can deal with it effectively, again specifically in terms of generalized and reciprocal exchange. For example, notice that the three dimensions affect control theory uses—evaluation (essentially goodness versus badness), potency, and activity—all are highly relevant for partners in reciprocal or generalized exchange.

However, four important differences distinguish current control theories and evolutionary reasoning concerning these mechanisms. First, control theories suggest we have a perception of ourselves that is acquired and that we try to maintain. Evolutionary reasoning, on the other hand, suggests we are motivated to perceive traits in ourselves that may not in fact be true of us at all, but would be advantageous for us to have (Whitmeyer 1997b, 1998). It would be advantageous for us if others saw us as honest, kind, intelligent, good-looking, popular, and so forth. We try to perceive those qualities in ourselves, which involves control-theory like mechanisms of trying to confirm such qualities especially when they have been disconfirmed.[9] The evolutionary advantage is that doing this in fact would tend to make us appear better partners for generalized and reciprocal exchange.

Let me state the difference another way. Control theories' mechanisms for ourselves involve a self-identity that we try to meet. Evolutionary theory suggests there is no such self-identity. Rather self-identity—or perhaps better, self-identification or self-labeling—is a continual process, and therefore is never fixed, but is fluid and uncertain. What are set are not qualities of our identity but rather qualities that are standards that we are motivated to perceive in ourselves (Whitmeyer 1997a, 1998). We

can say something about those qualities also. Namely, they will be characteristics that make us or make us appear good partners for exchange, including generalized exchange. Some may be universal, such as "honest," "generous," "compassionate," and identification with a group, while others may be specific to groups or types of people, such as "fast" for athletes, or "good mother" for mothers.

The second difference also concerns our perceptions of ourselves. Evolutionary reasoning suggests that our desires to perceive certain traits—and to not perceive other traits—in ourselves are motivations. They are weighed in the balance with all our other motivations when we decide on behavior. We may have evolved the ability and predisposition to take identity matters into consideration, but it would have been in light of our situation and other incentives present. Thus we try to present ourselves as honest, we want to think of ourselves as honest, but we also would like the gain from doing dishonest things. Here, sometimes we can get away with doing dishonest things, while keeping the label "honest" for ourselves by altering our perceptions and presentations of the facts and rules (Whitmeyer 1998). Note that this view of identity reconciles Burke and Stets' (1999) and Lawler and Yoon's (1996, 1998) findings concerning commitment formation. Burke and Stets (1999) found that if partners confirmed each other's self-identity then commitment to the relation increased. If wanting to have certain traits confirmed are motivations or desires, then reciprocal confirmation of what the other wants to hear simply constitutes a positive exchange. This has the ultimate effect of increasing commitment, exactly the process Lawler and Yoon (1996, 1998) discussed.

The third difference concerns perceptions of others, not ourselves. Again, the control theories state we have standards that we try to make our perceptions fit. I suggest

that is somewhat misleading, although it may seem to be the case in the short run. The greatest benefit to us should be for being accurate in our perceptions of social situations, thus we should have evolved to be fairly accurate. However, perceptions can be very much in error. Thus evolution probably would have favored a conservative approach to processing perceptions. It is an innate version of what we see in science. Namely, most scientists do not throw out the old theory the first time they get evidence that does not fit. Instead, they proceed conservatively, assuming perceptions of the results were wrong, or initial conditions were not what they thought, and so forth. Only with repeated evidence, especially from a variety of situations, are they likely to change the old theory, their basic understanding of processes. I suggest our perceptions of something social that does not fit our preconceptions or standards works the same way. Initially, we infer that something is wrong in our perceptions, that there are other elements in the situation of which we were not aware, or something similar. However, over time, with increasing discrepant evidence, we become more likely to change fundamental understandings.

The fourth difference also concerns perceptions of others. The fact about others that is most important to us probably is whether or not they are worth having as exchange partners. Now in generalized exchange almost everyone is *potentially* useful—as per that Aesop's fable about the lion and the mouse. So the key questions are these. For negotiated and especially reciprocal exchange, we ask what the likelihood is that this person will cheat us. For generalized exchange, we ask if the person is a member in good standing of some generalized exchange group of ours.

A key to evaluating the "good standing" part is what I earlier called *worthiness*. Namely, do others in the generalized exchange group consider the person to be a member

in good standing of the group, or if you do not know, are they likely to? If others do not, then you gain nothing with the group by helping this person; they may even punish you for doing so. If others do consider the person to be a member in good standing of the group, then you become more deserving in the eyes of other group members by helping the person, and you may be rewarded for it. In short, we monitor not only a person's personal characteristics relevant to exchange, but also whether the person is potentially a member of some generalized exchange group, and if so, the person's worthiness, the person's position or likely position in the eyes of the group.

Note that using evolutionary reasoning to develop theory about exchange processes and identity processes in fact points to an integrated theory that handles both types of processes. In recent years, there have been calls made for combining group process theories, specifically exchange, identity, and status theories, and some steps made to do so (e.g., Willer, Lovaglia, and Markovsky 1997). Taking exchange almost by definition to be the essence of social relationships, evolutionary reasoning puts identity processes and, as we will see, status processes as well in the service of exchange. As the preceding discussion implies, identity processes are especially likely to be important in reciprocal and generalized exchange.

Let us consider what these modifications to theory concerning identity imply for research, for self-identity first, then identity of others. Thinking of self-identity as in fact self-identification, it is a process that, while not a group process, nevertheless exists to deal with group process. Research here means investigating specific traits and standards for ourselves: what they are, how much different ones matter to us, and what it takes to create different ones. The assumption that the purpose of self-identity or self-

identification is to facilitate our handling of exchange situations provides a theoretical basis for the research (see e.g., Whitmeyer 1998).

The next level is theory and research into group processes that incorporate concerns about ourselves—how we perceive ourselves and how others perceive us. The group processes specifically are exchange processes, of all types. At the theoretical end, this is a modeling issue. The standard, fairly successful way of modeling individuals in exchange processes is in terms of preferences they are trying to realize. We can incorporate self-identity matters into such models easily by translating them into preferences or motives (see, e.g., Whitmeyer 1998).

In empirical research this can be operationalized, for example, by attaching identity labels to behavior in exchange studies or linking exchange behavior or outcomes to justice. Studies of exchange that include reputation as a factor (e.g., Abell and Reyniers 2000; Bowles and Gintis 1998; Ensminger 2001; Keister 2001; Kollock 1999) already thus are incorporating the importance of others' perceptions of us. However, this can be expanded greatly. For example, behaviors need not vary along an obvious "cooperating" versus "cheating" dimension, but can vary along the more subtle "exploitative" to "generous" dimension, such as in simple exchange networks. Transmission of information concerning exchange behavior can be varied, for example, by encouraging intermingling and conversation—gossip—or simply by allowing bystander observation. Here we also can study self-deception, as a product of conflicting motives concerning self-identity—how we would like to be—and advantages to recognizing others' perceptions of us accurately.

We also should study self-identity formation. Thinking of this again as self-identification or self-labeling, two processes become relevant: how and why we attach values to traits, and how we apply traits as labels to ourselves. In fact, considerable research already has been conducted in this area (e.g., Allison, Messick, and Geothals 1989; Cates and Messick 1996), but without a clearly theoretical basis, without understanding self-identification as a purposive process as evolutionary reasoning suggests. I think it may be especially important and fruitful to look at identification with a group, as one aspect of self-identification, from this perspective.

If we turn to others' identities, several lines of research suggest themselves. One stems from the idea, mentioned above, that we process discrepant information about others' identities in a conservative—that is, mistake-minimizing—fashion. Again analogously to what happen with scientific theories, I hypothesize that evidence contradicting well-established attachment of traits to a person or especially a class of people is likely to be treated more skeptically than evidence contradicting a recent attachment of traits. Skeptical treatment of evidence means providing an alternative, non-trait explanation of it, or even questioning whether it is true. Thus a mother being apparently cruel to a child, when mothers are supposed to be loving and kind, may be explained away as due to extreme stress, or as reasonable punishment for a serious transgression for the child, or it may even be disbelieved. However, I also hypothesize that as discrepant information, especially of varied types, is repeated, the attachment of traits itself becomes more likely to change.

We can put concerns about others' identities more explicitly into the framework of generalized exchange. This means looking at identity effects in the context of helping

behavior, one-shot prisoner's dilemmas, and more formal generalized exchange structures. We know already that in-group and out-group labels have effects (Tajfel, Billig, Bundy and Flament 1971; Yamagishi, Jin, and Kiyonari 1999), but we can go far beyond this. We can look at effects of perceived worthiness. We can study the process of collecting and transmitting information about identities. For example, when presented with a new, unfamiliar person in a generalized exchange situation, people should be willing to make efforts to ascertain the person's group membership, standing in the group, and exchange reputation. We can study ostracism. For example, we should be able to predict its likelihood depending on the situation and perceived behaviors and reasons for them. All of these processes are likely to be implemented via emotions—for example, empathy, sympathy, and anger. This implementation deserves study as well, if only because emotions do not perfectly track costs and benefits in situations, including generalized exchange ones, and thus need to be included to have accurate explanations.

Table 3 summarizes the principal research suggestions and predictions produced by evolutionary reasoning in the area of identity that I have discussed.

Table 3 about here

STATUS PROCESSES

Let me turn finally to status processes in groups. We know that in task-focused, collectively oriented groups, typically a hierarchy forms quickly and endures. Over the past few decades, Joseph Berger and many other researchers (e.g., Berger, Fisek, Norman

and Zelditch 1977; Skvoretz and Fararo 1996) have created expectation states theory (EST) to provide a description and explanation for this and ancillary phenomena.

My question here once again is what evolutionary reasoning can contribute to furthering our understanding of status processes. Given that status processes are rapid, practically automatic, and ubiquitous—not just among human groups, but among virtually all social animals (de Waal 1996; Wilson 1975)—it is likely that inherited qualities in humans play a specific role in their occurrence. Clarifying that role should help us improve our explanations.

Let me start by emphasizing the difference between two concepts, prestige and performance expectations. Prestige simply means rank; to have high prestige in some group means to be ranked high in that group. Performance expectations or expectation state refers to how well group members think a group member will do at a particular task or at tasks in general.

EST explains the emergence of a prestige hierarchy as the result of formation of varied expectation states, different performance expectations for different group members. A key concept is that of status characteristics. These are characteristics that, if group members differ on them and know that they do, typically result in predictably different performance expectations. EST further distinguishes between diffuse status characteristics, such as gender, that do not pertain to a specific task or task type, and specific status characteristics, such as crossword puzzle skill, that do.

Status Characteristics and Performance Expectations

Let us look at the relationship between status characteristics and performance expectations more closely. A key evolutionary question is at what level predispositions concerning this association are built in, evolved. As noted earlier, inevitably at some level they are innate, even if all that evolved was a general ability to learn an association between a human characteristic and performance expectations. However, there are other possibilities. To enumerate several, we again could have evolved simply an ability to associate human characteristics with performance expectations, due to experience or information from others or both, in a statistically sophisticated, predictive fashion. With less plasticity, we could have evolved an ability to make a single distinction in this matter, such that a human characteristic is a status characteristic or not, but not the ability to associate different status characteristics with different performance expectations.[10] Another possibility is that we evolved a predisposition for processing some human characteristics as status characteristics automatically, without learning, while for other characteristics learning this contingently, that is, contingently associating them with differential performance expectations. Within this possibility there are a number of variants. With greatest sensitivity, each innate status characteristic may have different associations with performance expectations, and each acquired status characteristic may develop its own association with performance expectations. It could be that innate status characteristic differ in associated performance expectations, while acquired ones are all the same, or that the innate ones are all the same while acquired ones can differ. With least plasticity, it could be that some status characteristics are innate and some are acquired, but all have identical associations with performance expectations.

Let me reiterate that no matter which of the mentioned possibilities—or of ones I failed to mention—is closest to true, it has evolved. That is, it is supported and processed by the human brain, a physiological organ that has evolved. Thus evolutionary reasoning can be useful in helping us figure out which of the possibilities is most nearly correct.

Let us see how. Consider the possibility that some status characteristics are innate. Evolutionary reasoning combined with empirical evidence tells us it is not possible that *all* status characteristics are innately so. Only characteristics that differentiated people in the evolutionary environment could be innate status characteristics. For example, educational degree works as a diffuse status characteristic in modern American society (Berger et al. 1977); it could not be innate, since educational degrees were not conferred in any sense in the evolutionary environment. On the other hand, all past and present societies of which we know not only make gender and age distinctions, but also are stratified by gender and age to varying extents (Brown 1991). Thus gender and age could be status characteristics innately. In fact, Hopcroft (2002a) currently is testing the hypothesis, based on evolutionary reasoning, that age and gender *interact* as status characteristics—in other words, that effects of gender are contingent on age.

Regarding gender, note that if gender is ceasing to operate as a status characteristic, which has been suggested as a possible recent development (e.g., Webster and Driskell 1985), that would lessen the likelihood that it is innately a status characteristic.[11] However, Troyer (2001) recently found gender still operative among undergraduates at Iowa, a finding replicated even more recently by Hopcroft (2002b) in North Carolina.

Somewhat weaker possibilities for innate status characteristics are beauty, height, and disability. All of these currently operate as diffuse status characteristics in American society (see Houser 1997; Webster 1983). Moreover, all would have differentiated people in groups in the evolutionary environment, where they may have been associated statistically with general performance on tasks. Beauty tends to denote physical soundness and health (Etcoff 1999); height and disability are correlated with physical prowess. Another possibility as innate status characteristic is title. This is trickier, because title is conferred socially and does not have a nonsocial basis like age or gender. However, all groups have differential rank and everyone will know who the leader is (Brown 1991).

Let us look at interaction between diffuse status characteristics more closely. Regarding gender and age, we do not need to go into specific reasons why gender might have evolved to be a status characteristic innately. It suffices to note that for women past the age of childbearing, physical and physiological differences from men are less, as are behavioral differences resulting from those physical and physiological differences. Thus, if there was enough time and selective force to create gender as a status characteristic, then it *could* have and, Hopcroft argues, probably *would* have created it as a conditional status characteristic, conditional specifically on age. Or to put it differently, there should be an interaction between age and gender, such that gender is operative only, or perhaps more strongly, when young women are involved.

Similar reasoning may suggest the possibility of other conditional or interaction effects. For example, status effects of height might be conditional on age or gender. Greater height would suggest greater physical strength and speed, which would have

mattered more for what the young did. Height also tends to indicate the quality of background, since children who are better nourished and whose mothers are better nourished will tend to be taller. However, this correlation would have tended to become less important as people distanced themselves in age from their background, as their parents and other senior relatives who might have helped them died. Thus, status effects of height may have evolved to diminish as age increases. As for an interaction between height and gender, both qualities signaled by height—physical strength and speed and quality of background—might have mattered more for men than for women. Thus, height might have evolved to be a status characteristic more for men than for women.

It may be worth noting that evolutionary reasoning suggests that race, a status characteristic at least in U.S. society, could *not* be innately so (see also Kurzban, Tooby, and Cosmides 2001). In the evolutionary environment people would not have met others who were quite different phenotypically very often. It is possible that an in-group bias in performance expectations could have evolved. However, race as a diffuse status characteristic clearly is not an in-group bias since members of both groups award higher performance expectations to members of the same group.

A distinct but related question is whether all status characteristics, diffuse and specific, are associated identically with performance expectations. This has been a continuing issue for EST. For example, Foddy and Smithson (1996, 1999; but see Balkwell 2001) have suggested that status characteristics may be graded rather than dichotomous (either high or low) in their effects, and thus that different status characteristics may have different effects on performance expectations. Recently Simpson and Walker (2002) have proposed that diffuse status characteristics have

stronger effects on performance expectations than specific status characteristics when none is explicitly relevant to task performance.

Here, evolutionary reasoning suggests both sides are plausible. On the one hand, our brain unquestionably is capable of learning to make and making fine and subtle distinctions. For example, we certainly learn to associate different performance expectations with different *individuals*. On the other hand, because of high variance between individuals, empirically status characteristics at best could be only a crude guide to quality of performance. Thus, it is questionable whether a sophisticated predictive apparatus would have any advantage over a simple dichotomous one. In short, evolutionary reasoning suggests the question is simply an empirical one, at both the behavioral and the neurological level. Plus it provides the caution that in fact the answer may differ for innate status characteristics, if there are any, and learned ones.

Hierarchy in Small Groups

Let me turn now to hierarchy and its emergence in small groups that are task-focused and collectively oriented. Typically, we identify hierarchy in such groups by leadership behavior. In fact, differentiation of group members by number of speech acts usually is sharp, especially among those who talk most, thus sufficient to identify the hierarchy. In addition, for example, the top group member typically utters a greater percentage of directive and evaluative statements than other group members. On post-task private questionnaires, group members typically state that the top group member made the greatest contribution to task performance (Webster 1975).

The fact that this ranking process occurs quickly, automatically and without explicit attention, and as far as we know, universally, suggests that group members have evolved predispositions that facilitate it happening. That assumption, if correct, is an aid to explaining the process theoretically because it puts a key constraint on the process: it has to be in people's interests to cooperate with the process, at least generally and in the long run. Let us see what that brings us.

I suggest that we distinguish between four elements in the hierarchy formation process. The first is leadership behavior. The second is prestige or rank. As I noted, leadership behavior is strongly related to prestige. However, they are distinct because prestige is not a behavior but a belief, typically a collective belief, that is to say, one shared by all group members. The third and fourth elements also are beliefs: specifically, performance expectations and, what is often overlooked, performance obligations.

As anticipated by Homans (1974), Coleman (1990), and others, the requirement from evolutionary reasoning that the hierarchy formation process generally must be in everyone's interests suggests that the process in essence is exchange. Namely, group members confer prestige on certain group members, those for whom they have higher performance expectations, as an inducement and reward for leadership behavior. However, accompanying the conferral of prestige are performance obligations.

Let me give the evolutionary rationale for this explanation, before treating it more formally. The tough questions concern why people should give others high prestige, and why they should give high prestige people the associated perquisites. Suppose you have a group engaged in collective action. It often makes sense for people to join collective action, for various reasons among which is the one that doing their bit helps. One more

person in the hunt, or one more person at the demonstration, makes those activities at least just a little bit more effective. However, leadership or heroism is not that way. Somebody has to be the leader, or someone has to undertake this dangerous mission. But if it is not I, then it will be somebody else. It may not make much difference to the group whether it is I or it is somebody else, but it sure makes a difference to me. I would much rather it were somebody else!

Consequently, to get people to take those special positions they need to be compensated, and they are with prestige and its trappings. Note that this logic would hold in the evolutionary environment. Your basic hunting group, for example, would be a small, collectively oriented, task-focused group. Perhaps more importantly, as a recent paper in progress by Michael Lovaglia and collaborators argues (Lovaglia, Barron, and Houser 2002), your basic group for defense or aggression against other groups also would be collectively oriented and task focused. In both types of group, the position of leader or hero would be the most dangerous and consequently would require special rewards to motivate someone to take that role. Others in the group therefore provide those rewards. In fact, I argue, we evolved predispositions to do so, reflected in the fact that we do so automatically, often with emotion.

Let us look at this more thoroughly. Four key assumptions are behind the exchange explanation of hierarchy formation. First, I assume prestige is a strong human preference, as emphasized more than a century ago by Veblen (1918 [1899]) and by many others since. It is likely to be an innate preference, for high prestige almost always has brought advantages, such as more power, more resources, and, the ultimate evolutionary coin, more or more valuable offspring (Ball and Eckel 1996; Kaplan and

Hill 1985). As a specific example of the strength of this preference, Calhoun (1994) tells about a Chinese dissident who, apparently because of the popularity her dissidence was getting her, could not restrain herself and eventually was killed for it. She was "clapped to death," people said.

Second, I assume leadership behaviors are effortful and costly, and something that *ceteris paribus* people would rather not do. The leader must think at a relatively high level; the leader must evaluate; the leader may have to sanction. Frequently the leader takes more risks, sometimes reputational, sometimes financial, and sometimes physical, as described by Levi-Strauss (1955) for a foraging group and by Calhoun (1994) for the Chinese dissident. We should not confound the work and burden of leadership with its rewards.

Third, people should want to reward leadership behaviors by others. This is more problematic than the first two assumptions, in part because of the collective action question of why we should not leave it to *others* to do the rewarding. However, it fits empirical evidence and is evolutionarily plausible. In large part, leadership is provision of a public good that is non-rival, meaning that the amount of the public good one person receives is not affected by the number of others also receiving the good (Taylor 1987). It is possible to show mathematically why it may have been advantageous for people to evolve a tendency to confer prestige, and perhaps material rewards as well, on others who provide non-rival public goods.[12] The proposition that people should be more willing to provide prestige and its trappings to those who provide *non*-rival goods also should be testable in the laboratory. Note that one branch of EST states that reward expectations vary with states of status characteristics in the expectable way (Berger, Fisek, Norman,

and Wagner 1983, 1985). This theory dovetails with the proposition that past, present, or future providers of non-rival public goods will receive material rewards.

Suppose then that a person is receiving prestige and perhaps material resources in return for a non-rival public good such as leadership. At this point, there is a positive feedback process. By giving prestige and perhaps other resources to a person, the group is giving the person resources that further increase the person's power concerning group tasks and behaviors of group members (see, e.g., Ball and Eckel 1996, 1998; Ball, Eckel, Grossman, and Zame 2001; Thye 2000). At the very least, the leader has received disproportionate ability to sanction other group members, which gives the leader power concerning various outcomes in these bilateral relationships. Boehm (1999) has suggested that humans may have evolved as a counter weight a predisposition to ally with others to interfere with that positive feedback process. Note we should be able to investigate formation of such alliances in the laboratory.

Let me elaborate on one point concerning the positive feedback process. When a person has high prestige, which also means the person is likely to have enhanced power in some areas, simply having an exchange relationship with that person probably will be valuable to others in the group. This means that, in a bilateral exchange, the existence of an exchange relationship with a high-prestige person is part of every offer or contribution a high-prestige person makes. It is, in a sense, an exchange resource for a high-prestige person. Thus part of what a high-prestige person receives in an exchange will be in return for the value of simply having an exchange connection to her or him. Thus the presence of this intangible element will make apparent, more tangible exchange outcomes appear to favor the high-prestige person. Moreover, extra value may attach to goods

given by a high-prestige person, because they are also symbols of this connection (Ball and Eckel 1998; Ball, Eckel, Grossman, and Zame 2001; Thye 2000).

Fourth, prestige entails performance obligations. "Noblesse oblige," or perhaps for our purposes, "Prestige oblige." In other words, I suggest that people did not evolve to grant prestige freely, but that they expect performance, delivery especially of those non-rival public goods, in return. Consequently, when a high-prestige person does not perform, those who grant prestige respond as if they have been cheated, as people do who do not receive an expected reward. They become angry and perhaps even aggressive. Among other things, they are likely to cease awarding prestige to the high-prestige person. Performance obligations are the *quid pro quo* that in the evolutionary environment would have made awarding prestige advantageous.

This clearly is related to work in EST on legitimacy (see Berger, Ridgeway, Fisek and Norman 1998). Note that lack of legitimacy in status processes in fact encompasses two different situations. In the first, we have a person for whom others form high performance expectations and to whom they therefore have awarded prestige, but who does not carry out her or his performance obligations. In the second, we have a person who has been awarded a formal position of authority and power in some area (a "valued status position" in EST), but who has qualities such that others have not formed high performance expectations for her or him.

Now, from the exchange perspective I am suggesting, using evolutionary reasoning, in the first situation the high prestige person essentially is cheating. Note that this can happen in two different ways. The person may try to deliver on performance, but may fail, either because they in fact do not have abilities to match others' expectations or

because the situation made success impossible. On the other hand the person may not even try to deliver on performance. Now either of these should elicit in other group members the response typical when an exchange partner fails to come through. Emotionally, they should experience negative emotions, in particular anger. These emotions make more likely the response behavior of breaking off their end of the deal—here meaning they revoke prestige. Lovaglia and Houser (1996) experimentally demonstrate such effects of negative emotions, and reverse effects of positive emotions. However, cognitively, group members' performance expectations for the high prestige person should decrease more if the high prestige person is trying to meet performance obligations but failing than if the high prestige person simply is shirking, is not trying.

This exchange view of hierarchy formation suggested by evolutionary reasoning leads to two more predictions. Both are related to the possible shift from a short-term exchange process to a longer-term exchange relation. As noted above in the section on exchange, Lawler and Yoon (1996, 1998) have shown that successful exchange leads to an increase of commitment and loyalty to the exchanging unit. Here, that implies that successful exchange with the leader—meaning that the leader delivers on performance obligations—should lead to commitment to that leader, sticking with that leader even when someone that looks better comes along. Indeed, I suggest that if leader's delivery on performance is big enough—either good for a long time, or perhaps overwhelming for a short time—group members are likely to award the leader prestige more-or-less permanently.

The other prediction comes from applying Kollock's (1991, 1993) treatment of accounting in long-term exchange relations. Namely, accounting systems are loose;

frequently, people are tolerant of temporary, although not enduring, inequities in exchange in long-term relationships. Here, that implies that in a long-term task-focused group, group members will tolerate occasional poor performance by the leader, whether due to low effort or for some other reason. However, if the poor performance becomes chronic, group members will break off the exchange relationship, that is, depose the leader.

Recall that in the second situation of illegitimacy, a person has been awarded a formal position of authority and power in some area, but has qualities such that others have not formed high performance expectations for her or him. We can predict the following process. Behaviorally, group members are likely to withhold prestige. However, if the appointed leader has power in some valued area, people are likely to behave with deference to the leader's face, giving the leader apparent prestige in return for better treatment. This could deceive others in the group, leading to truly higher prestige in a process of pluralistic ignorance…except that once again people are likely to engage in gossip behind the leader's back in which they reveal their true attitudes toward the appointee. As with the first situation of illegitimacy, in which the leader did not deliver on performance obligations, emotions experienced by group members are likely to be negative. However, for this second situation, we can predict less anger and more of something like scorn. Anger will be less because anger typically is the result of perceptions of being cheated in some exchange. If group members engage in little exchange with the appointee—they confer little prestige because they do not expect the appointee to come through on performance obligations—they are not likely to perceive they have been cheated much. Finally, note that the exchange view of hierarchy

formation suggests that if an illegitimate leader guides a group to high performance, problems over that illegitimacy will abate. In other words, the reciprocal exchange can occur in the reverse order: first the (illegitimate) leader carries out performance obligations, then the other group members award the leader prestige.

Note that in both situations, perhaps particularly the second, we can predict variation in different group members' responses as different group members focus on different performance obligations. Note that in many groups, a variety of performance obligations incur on the leader. For example, some may be more related to managing the group and some may be more related to performance on group tasks. Moreover, different obligations may be more important for different group members—for example, some members may care more about group management and some more about contributions to task performance. Thus, should the leader's performance vary in quality depending on the obligations in question, group members may vary in the prestige they award and emotions they experience toward the leader. In legitimacy terms, the leader may have high legitimacy for one subgroup, low legitimacy for another.

To sum up then, I propose that we have the following evolved tendencies. People generally are willing to incur performance obligations, to assume leadership responsibilities, in return for prestige. Others, at least once they see they will not win prestige themselves, are willing to grant prestige in return for performance of leadership responsibilities. This situation meets the *sine qua non* criterion of exchange: this exchange is, or at least in the evolutionary environment *was*, generally to everybody's benefit.

Note that this exchange, for which I am suggesting we have inherited predispositions, has special features that differentiate it from most exchange processes. The exchange of prestige for delivery on performance obligations is apparently reciprocal exchange, since there is no explicit negotiation of the exchange and the exchange is not simultaneous. Moreover, at least early in the group's existence, if either side fails to deliver the exchange probably will end. However, two elements make it different from most reciprocal exchange: the non-rival nature of the goods one side delivers, meaning that they are delivered to the group and not focused on particular individuals within it, and the automatic, involuntary conferral of prestige by the other side. Note that groups also typically reward providers of other non-rival goods such as defense and entertainment with prestige.

Let us now look at how we can investigate and test these points further. Already we have predicted that in task-focused, collectively oriented groups if high-prestige members fail to meet their performance obligations, low-ranking members will tend to withdraw their awarded prestige and to become angry and possibly aggressive toward the delinquent high-prestige members. We can go further. Suppose in such a group there is good reason to believe that a person for whom high performance expectations have formed will not deliver on performance obligations. Then we can predict that other group members will award that person neither prestige nor material benefits. Correspondingly, they also will not form high reward expectations for that person—that is, they will not expect that person to receive a disproportionately high share of benefits. Moreover, all of these considerations imply, at a more general level, that leadership reputation will matter to members of such a group. In other words, people should be

willing to expend time and other resources finding out and communicating about leadership qualities of potential leaders, perhaps as a positive function of the benefits at stake.

Several predictions follow from the idea that prestige is a benefit while performance of leadership behaviors is a cost. Increasing apparent prestige or rank of group members should increase their performance of leadership behaviors and even the quality of their contributions, while decreasing apparent prestige should have the opposite effect. Increasing anonymity of contributions should lower the performance of leadership behaviors by high-prestige members. Adding costs to being a leader—say, attaching some onerous task to the position—should decrease initial competition for that position. Adding benefits to being a leader, such as wider trumpeting of prestige or increased power in some areas, should increase that initial competition. All of these predictions can be tested in the laboratory.

Similarly, we can predict effects of self-identity—or rather, as I suggested above, self-identification—issues on prestige outcomes. Under some circumstances, people may take prestige outcomes or even aspects of group process as relevant for self-identification, which thereby adds another motivation, another cost-benefit component, to the mix of behavioral determinants.[13] For example, if someone has been accused of being "weak" or "unassertive," she may try to refute that to herself by being especially active in discussion, with possible results for prestige outcomes. Likewise, heightening the perceived relevance of group participation or prestige outcomes to more general abilities or traits is likely to affect group participation and prestige outcomes in predictable ways.

Table 4 summarizes the principal research suggestions and predictions produced by evolutionary reasoning in the area of status processes that I have discussed.

Table 4 about here

CONCLUSION

In this paper I have applied evolutionary reasoning within three principal areas of group process research to generate suggestions for future research and specific predictions to test. Within the areas of exchange, identity, and status processes, I used evolutionary reasoning to generate propositions about predispositions of human individuals relevant to those processes. Those propositions lead to expansions of the social situations we empirically research. To the extent that empirical tests support them, they lead to extensions of group process theories.

It is important to note that evolutionary reasoning, application of evolutionary psychology, is neither competitor nor substitute for usual sociological theories and methods in group process research. Rather it is a complementary tool, which can help advance theory and suggest new areas of empirical investigation. In this paper I have suggested very little modification of existing theory in any of the areas of group process. For example, current theories of effects of network structure on negotiated exchange outcomes work well. However, evolutionary reasoning suggests that reciprocal and generalized exchange considerations will be important for people in most situations. They can be included, for example, by allowing network choice, at which point factors

such as reputation, identity, social intelligence, and trusting ability may become influential. In the area of status processes, evolutionary reasoning suggests that performance obligations are likely to be an important element and should be included more explicitly in theory and research.

Beyond the specific contributions that evolutionary psychology may be able to make in different areas, I have implied another contribution in this paper. Namely, evolutionary reasoning may help to lead us to a unified group process theory, a comprehensive, logical coherent, appropriately parsimonious method of explanation and prediction for any and all group processes. For example, I have suggested here that concerns with both our own and others' identities exist primarily to help us in exchange processes. Likewise, I have suggested that status processes in task-focused and collectively oriented groups are operating implicitly in an exchange process, of prestige for leadership. This in turn implies that ultimately we may be able to put all these processes together under an exchange framework. At a more fundamental level, we should be able to take the different individual-level models at the heart of our currently distinct group process theories and put them together into a single individual-level model that will be the basis for our unified group process theory. Indeed, from a different perspective, any person's behavior--both overt and internal--is produced by a fairly discrete system and therefore at least in theory must be capable of being modeled by a single model.

This returns again to the potential contribution of evolutionary psychology. As the word "psychology" suggests, any contribution evolutionary psychology can make is by improving our conception of the individual. Doing so is not likely to overturn or even

to introduce radical modifications in existing group process theories, but it will improve them (Whitmeyer 1994). It will make them better individually, and perhaps even bring them together.

NOTES

1. This is a simplified picture. Human traits important for group processes undoubtedly evolved over a long period of time, and in a variety of physical and social environments (Foley 1996).

2. This thus subsumes productive exchange as defined by Lawler (2001).

3. This is not how Ekeh (1974; see also Yamagishi and Cook 1993) defines productive exchange.

4. Some such generosity may be for prestige gains instead or in addition (Smith and Bird 2000).

5. Jasso (1993) also links our differential evaluation of gains and losses to our more general evaluation of justice. She specifically shows that Tversky and Kahneman's (1981) conception of that evaluation is compatible with the justice function she has advocated (Jasso 1980, 1993).

6. Boehm (1999) acknowledges the long-term advantages of meat-sharing, but thinks he has to invoke group selection arguments to explain altruism. However, it is likely that generalized exchange benefits are enough to explain the prosocial tendencies he has in mind (see Kameda, Takezawa, Tindale, and Smith 2002; also Heckathorn 1993).

7. What I call worthiness is close to what in earlier times was called "honor." Possessing honor, as a preoccupation of elites in for example the United States in the days of the early republic, essentially meant being a member in good standing of the generalized exchange group that was the elites. Its importance was such that people occasionally risked their lives and even, as in Alexander Hamilton's case, died for it (Freeman 2001).

8. See Macy and Skvoretz (1998) for an example of how ability to refuse to exchange, while still collecting a payoff, can affect formation of an exchange relationship.

9. Regarding moral traits in particular, developmental psychologist Jerome Kagan's (1998) way of stating this is that we want to see ourselves as virtuous. Turner (2002) portrays Freud as having a similar conceptualization of how we produce behavior.

10. Here, I ignore effects of how relevant people think a status characteristic is to the task at hand, which has been shown to affect performance expectations in the expected fashion (Berger et al. 1977). For example, a mathematics Ph.D. will get higher performance expectations than an undergraduate, but if the task is a math problem, the performance expectations will be higher still.

11. It would not refute it entirely, since being a status characteristic could be partially innate and partially learned. For example, we innately like sweets, yet it is possible to acquire an aversion at least to particular sweets that overrides the innate preference.

12. I used a similar mathematical demonstration in my explanation of pro-ethnic behavior (Whitmeyer 1997c).

13. Troyer, Younts, and Kalkhoff (2001) look at the effect of varying strength of motivations, including a person's partner's perception of the person, on effects of status on influence.

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Table 1. Predispositions suggested by evolutionary reasoning for dealing with the problem of cheating by others and by ourselves.

SOLUTIONS FOR OTHERS	SOLUTIONS FOR OURSELVES
Emotional responses to being rewarded or punished	Emotional responses to being rewarded or punished
Sensitivity to unfairness	Loyalty
Keeping balance sheet in reciprocal exchange relationship	Sensitivity to fairness
Identifying the generalized exchange group	Keeping balance sheet in reciprocal exchange relationship
Attention to others' exchange reputations	Attention to our own exchange reputation
Monitoring, reporting, and sanctioning others' exchange behavior	Social exchange heuristic
Using ostracism as negative sanction	Concern with our identity
Evaluation of others' worthiness	
Concern with others' identity	
Social intelligence	
Trust ability	
Risk aversion	

Table 2. Suggestions for Research and Predictions in the Area of Exchange Due to Evolutionary Reasoning.

Exchange Suggestions

In exchange networks, make not exchanging a viable option.

In exchange networks, allow actors to choose or change networks. Analyze phenomena of emotion, loyalty, reputation, worthiness, impressing others, and hostility to rivals.

In exchange networks use less naïve participants, ones with more experience or training.

Do more research on reciprocal and generalized exchange. E.g., allow network choice and look at effects of reputation, identity, social intelligence, and trusting ability.

In social dilemmas research, look at effects of preferences for material gain, prestige, impressing others, excluding rivals, reputation, identity, and risk.

In social dilemmas, find out when punishment works and when it does not, and determine why. Find out the extent to which people know when to use and when not to use punishment, and if they do know, find out how they know.

In social dilemmas, find out what mechanisms of reputation people will create and use on their own, and the degree to which these are optimal.

Investigate circumstances under which people will develop formal reputation systems. Determine whether or not those systems are of optimal toughness.

In exchange systems, investigate the part identity (self-identification) plays in loyalty and in use of punishment. Investigate what affects these effects of identity.

Exchange Predictions

Reciprocal exchange will tend to produce greater emotional attachment to the group than negotiated exchange.

As group orientation is increased—such as in small chains as opposed to large groups—successful exchange will produce more positive emotions toward the group and greater satisfaction from confirming group identity; failed exchange will produce the opposite.

In ultimatum game, when the payoff is earned, allocations will be more equal and when they are unequal will arouse stronger anger than when the payoff is not.

Third parties will react more strongly to seeing someone receive less than promised than to seeing someone receive more than promised. This difference will be greater in a non-zero sum situation.

Table 3. Suggestions for Research and Predictions in the Area of Identity Due to Evolutionary Reasoning.

Identity Suggestions

In exchange studies, look at effects on exchange behavior of attaching identity labels to that behavior, such as "exploitative" or "generous." Look at effects of allowing gossip, and of allowing bystander observation. Look at effects of these factors on evaluation of one's own exchange behavior.

Investigate the relationship of ostracism to exchange behaviors and to how the group labels a person, including in-group or out-group membership labels.

Investigate the role of emotions, such as empathy, sympathy, and anger, in the attaching of identity labels to people and their behavior.

Identity Predictions

The more exchange advantages possessing a particular trait appears to confer, the more likely people will be to claim that they possess that trait, including performance of behaviors demonstrating they possess that trait.

The more exchange advantages membership of a group appears to confer, the more likely people will be to claim they are members of that group, including performance of behaviors demonstrating they are members of that group.

People will treat evidence contradicting well-established attachment of traits to a person or especially a class of people more skeptically than evidence contradicting a recent attachment of traits. Possible skeptical treatments are providing an alternative, non-trait explanation of the evidence, or questioning whether it is true.

As evidence contradicting well-established attachment of traits to a person or even a class of people increase, especially if it is of varied types, the attachment of traits itself becomes more likely to change.

When joined by a new, unfamiliar person in a generalized exchange situation, people will try to ascertain the person's group membership, standing in the group, and exchange reputation.

Table 4. Suggestions for Research and Predictions in the Area of Status Due to Evolutionary Reasoning.

Status Suggestions

Investigate possible innateness of certain status characteristics, such as age, beauty, disability, gender, height, and title.

Investigate possible interaction between status characteristics in their effects on performance expectations. For example, plausible interactions are between height and age, and between height and gender.

Continue research into possibility that different status characteristics, or different types, have different effects on performance expectations. Pay special attention to plausibly innate ones. Also investigate this at level of brain physiology.

In task-oriented group, investigate formation alliances of group members to limit power of leader.

Investigate relevance of prestige outcomes and other aspects of group process for self-identification, and how that affects individual behavior and group process.

Status Predictions

In the absence of *any* rewards for leadership behaviors--including recognition by others and self-identification with a desired trait--people will tend to choose to follow instead.

People will be more willing to provide prestige and its trappings to those who provide non-rival goods than to those who provide rival goods.

Suppose the high prestige group member harms group performance. Other group members' performance expectations for the high prestige person should decrease *more* if the high prestige person is trying to meet performance obligations but failing than if the high prestige person simply is shirking, is not trying.

The longer or the more a group leader delivers on performance, the more likely group members are to continue to award that leader prestige in the presence of a seemingly better alternative.

In a long-term group, group members will be more tolerant of occasional poor performance by the leader than in a short-term group.

Poor performance by a leader will lead to negative emotions. However, when the leader is illegitimate as compared to legitimate, scorn is more likely and anger is less likely.

Table 4 (cont.). Suggestions for Research and Predictions in the Area of Status Due to Evolutionary Reasoning.

Excellent performance by an illegitimate leader will increase the leader's legitimacy, i.e., the prestige group members award to the leader. If performance is excellent in some areas but not in others, some group members may award prestige and others not, depending on which performance obligations most concern them.

Suppose group members have formed high performance expectations for a group member. The less likely that person is to deliver on performance obligations, the less prestige and material benefits they will award that person, and the lower will be reward expectations they form for that person.

The greater the benefits to group members from high group performance, the more resources they will be willing to expend finding out about leadership qualities of high status group members.

Increasing the apparent prestige or rank of group members will increase their performance of leadership behaviors and the quality of their contributions. Decreasing their apparent prestige will have opposite effects.

Increasing anonymity of contributions will lower the performance of leadership behaviors by high-prestige members.

Adding costs to being a leader—say, attaching some onerous task to the position—will decrease initial competition for leadership. Adding benefits to being a leader, such as wider trumpeting of prestige or increased power in some areas, will increase that initial competition.

The greater the perceived relevance of group participation or prestige outcomes to more general abilities or traits, the more self-identification and self-presentation motivations concerning those abilities and traits will affect group participation and prestige outcomes.