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## **Cultivating Morality and Constructing Moral Systems: How to Make Silk Purses From Sows' Ears**

Dennis L Krebs  
Simon Fraser University

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### **INTRODUCTION**

Most people would agree that the key to fostering harmonious social relations, enhancing the quality of our lives and ensuring the continuing existence of humanity lies in the cultivation of morality. Most people also would agree on the four main steps we need to take to cultivate morality. First, we need to define the behaviors we consider moral, which entails specifying the types of behavior we will target. Second, we need to determine what we have to work with, which entails identifying the mental mechanisms that give rise to moral and immoral behaviors, mapping their design, and determining what activates and inhibits them. Third, we need to determine how children acquire morality-producing mechanisms, how the mechanisms develop, and why different people end up with different mechanisms or with mechanisms designed in different ways. Finally, based on this knowledge, we need to design interventions that are equipped to maximize the acquisition and activation of mechanisms that give rise to moral behaviors and minimize the acquisition and activation of mechanisms that give rise to immoral behaviors. Faced with the task of cultivating morality, few people would expect much help from evolutionary psychology. In this chapter, I will argue that, contrary to such expectations, an evolutionary analysis of how moral dispositions evolved in the human species can help us understand the nature of morality, the ways in which moral mechanisms are designed, and how such mechanisms can be activated most optimally. Metaphorically, an evolutionary analysis of morality can teach us how to make silk purses from sows' ears.

### **SILK PURSES: DEFINING MORALITY**

Someone once wrote that morality is a concept that everyone possesses but no one understands. Viewing morality from an evolutionary perspective helps clarify what morality is by inducing us to ask what it was for; that is to say how the mechanisms that give rise to it evolved in the human species. To answer this question, imagine several hominid groups in

ancestral environments. What social strategies would most effectively have helped members of such groups survive, reproduce, and propagate their genes? Clearly, in hostile environments, banding together and cooperating for the purposes of hunting, building shelters, and protecting themselves against predators and antagonistic groups of hominids could have had greater adaptive potential than more individualistic strategies. Members of groups who worked together cooperatively could have reaped significantly more fitness-enhancing benefits than individuals could have by working alone or by competing against the others. So, it might seem, cooperative strategies should have evolved in the human species without impediment. Not so. Assume that you are a member of a group in which all members except one inherit mental mechanisms that induce them to contribute their share to cooperative endeavors and to take their share of the spoils. The deviant member inherits a mutant strategy that inclines him to take more than his share of fitness-enhancing benefits and suffer less than his share of fitness-reducing costs. As a result, he produces more offspring than the more cooperative members of his group, half of whom, on average, inherit his selfish strategy. His selfish offspring produce more offspring than their cooperative peers, inducing an exponential increase in the proportion of selfish members in the group until, eventually, there are no cooperative members left.

This evolutionary scenario is not only sad; it is self-defeating. As the number of cooperative members diminishes, so also do the resources produced through cooperation. For example, if no one is willing to make the sacrifices necessary to kill large game, to build group shelters, or to protect the group against predators, everyone suffers. Inasmuch as interactions between selfish individuals pay off more poorly than interactions between cooperative individuals, the benefits of selfishness decrease in proportion to the increase in the number of selfish members of the group.

I have argued that reaping the benefits of cooperation was one of the most important adaptive problems

faced by our hominid ancestors (Krebs, 1998, 2000a, 2000b, 2000c). This problem is intrinsically moral in nature. As put by the philosopher John Rawls (1971) in the opening pages of *Theory of Justice*,

Although a society is a cooperative venture for mutual advantage, it is typically marked by a conflict as well as by an identity of interests. There is an identity of interests since social cooperation makes possible a better life for all than any would have if each were to live solely by his own efforts. There is a conflict of interests since persons are not indifferent as to how the greater benefits of their collaboration are distributed, for in order to pursue their ends, each prefers a larger to a lesser share (p.4).

I believe that a sense of morality evolved in the human species to solve this adaptive problem. The biological function of morality is to enable individuals to maximize their benefits from interactions with others by upholding fitness-enhancing systems of cooperation. Viewing morality in these terms helps us understand its nature. Morality boils down to giving one's share (doing one's duties) and taking one's share (exercising one's rights), treating others fairly, as one would like to be treated, and resisting the temptation to maximize one's gains at the expense of others. To accomplish this, members of groups form social contracts. This conception of morality has been espoused in non-biological terms by many scholars. To quote Rest (1983), morality consists in "standards or guidelines that govern human cooperation—in particular how rights, duties, and benefits are [to be] allocated" (p. 558). Morality involves "the equilibrium of individuals in society...each reciprocating with other individuals according to rules that balance the benefits and burdens of cooperation" (Rest, 1983, pp. 572-573).

Kohlberg (1984) and other developmental psychologists have found that children's conceptions of morality change in stage-like ways as they develop. In terms of the evolutionary model I have outlined, such conceptions uphold increasingly broad and complex systems of cooperation. Stage 1 moral judgments uphold hierarchical systems of cooperation by prescribing deference to authorities. Stage 2 moral judgments uphold egalitarian systems of concrete reciprocity. Stage 3 moral judgments uphold systems of cooperation based in relatively long-term mutually-beneficial affectionate relations between spouses, family members, friends, and

ingroup members. Stage 4 moral judgments uphold systems of indirect reciprocity necessary to maintain social systems in complex societies. Finally, Stage 5 moral judgments uphold ideal systems of cooperation that maximize benefits for all: the greatest good for the greatest number. Kohlberg (1984) assumes that higher-stage, later-developing conceptions of morality are better—more moral—than earlier-developing, lower-stage, conceptions.

I have argued that the sophisticated systems of cooperation upheld by high stage moral judgments have the greatest potential to maximize net benefits for the individuals upholding them (Krebs, 2000a). In general, the more complex a system of cooperation, the greater the potential gains in trade. An important implication of this argument is that there is no necessary inconsistency between maximizing one's biological benefits and behaving morally. However, there is a catch: in general, the more complex a system of cooperation, the more susceptible it is to exploitation by cheaters.

To summarize, I believe that viewing morality from an evolutionary perspective helps clarify what it is by orienting us to the functions it was designed to perform. Conceptions of morality—silk purses—are ideas about how individuals can most optimally foster their interests in mutually-beneficial cooperative exchanges with other individuals. I turn now to a consideration of what natural selection gave us to work with—the sows' ears.

#### **SOWS' EARS: DETERMINING WHAT WE HAVE TO WORK WITH**

The main reason why some people assume that evolutionary theory has little to contribute to an understanding of morality is because they believe that moral qualities cannot evolve. They assume that all dispositions that are selected naturally are, by definition, selfish and immoral. As revealed in the following quotes, such "born bad" conceptions have been promulgated by eminent evolutionary theorists.

Nothing resembling the Golden Rule or other widely preached ethical principles seems to be operating in living nature. It could scarcely be otherwise, when evolution is guided by a force that maximizes genetic selfishness (Williams, 1989, p. 195).

Be warned that if you wish, as I do, to build a society in which individuals cooperate generously and unselfishly toward a

common good, you can expect little help from biological nature. Let us try to teach generosity and altruism, because we are born selfish (Dawkins, 1989, p. 3).

I believe these theorists are wrong for at least three reasons. First, genetically-selfish dispositions and other maladaptations can evolve (Crespi, 2000). Second, dispositions that were genetically selfish in ancestral environments need not necessarily be genetically selfish in current environments (see Crawford, 2004). And third, as explained by Janicki (2004) and others (e.g., Alexander, 1987; de Waal and Flack, 2000; Sober & Wilson, 1998), genetically selfish dispositions are not necessarily individually selfish or immoral. It is possible for individuals to propagate their genes (that is to say, to behave in genetically selfish ways) by caring for, cooperating with and helping others (that is to say, by behaving in individually unselfish and moral ways). The question is, what kinds of strategy—individually selfish strategies or individually unselfish strategies—were most adaptive in ancestral environments? Were individuals who behaved selfishly more likely than individuals who behaved unselfishly to survive, to reproduce, and to propagate their genes?

I believe the answer to this question is, what you see is what we got. If you observe people, you will see them behaving in selfish and unselfish ways. Such behaviors stem from dispositions that have evolved in the human species; they are activated in contexts in which they paid off in ancestral environments. With respect to unselfish dispositions, I believe at least four types—those that are deferential, cooperative, caring and docile in nature<sup>1</sup>—are equipped to give rise to moral behaviors. These dispositions are the sows' ears—the raw material with which those who seek to cultivate morality have to work. It is important to understand how these dispositions are designed, how they develop, and how they are activated; and this, in large part, entails understanding how they were selected in ancestral environments. In other papers I have offered explanations for the evolution of moral dispositions (Krebs 1998, 2000a, 2000b, 2000c; Krebs & Janicki, 2003). I will briefly summarize these explanations, then address their implications for public policy and personal decisions.

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<sup>1</sup> Self-regulatory mechanisms also give rise to moral behaviors, but I will not discuss them in this chapter.

### **The Natural Selection of Decision-making Mechanisms**

It is helpful to frame questions about the evolution of moral and immoral dispositions in the following way. Assume that our hominid ancestors inherited decision-making mechanisms designed to solve the adaptive problems they faced. Buss (1999, p. 49) characterizes such mechanisms as sets “of procedures within the organism that [are] designed to take in a particular slice of information and transform that information via decision rules into output that historically has helped with the solution to an adaptive problem.” Buss (1999) suggests that evolved mechanisms are activated by information relevant to the specific adaptive problems they were designed to solve and that the decision-rules they contain operate on “if-then” contingencies.

Assume further that different individuals may inherit mechanisms that contain different kinds of decision-rule, or strategies, and that such individuals (therefore strategies) compete against each another. By definition, winning strategies increase in frequency, or evolve, and losing strategies decrease in frequency, or go extinct. The question is, which strategies were best equipped to solve the adaptive problems faced by individuals motivated to foster their inclusive fitness through interactions with other members of their group?

Evolutionary theorists such as Axelrod and Hamilton (1981) have modeled such adaptive problems in Prisoners Dilemma games. In the simplest version of such games, players are required to select one of two strategies: either to behave selfishly or to behave cooperatively. If both players make cooperative choices, each propagates three offspring. If both players make selfish choices, each propagates one offspring. If one player makes a selfish choice and the other makes a cooperative choice, the selfish player propagates five offspring and the (now) altruistic player propagates none. It is easy to think of contexts in which modern humans face such choices and to see the moral dilemma inherent in them.

### **The Evolution of Selfishness**

Clearly, selfishness is the winning strategy in one-move Prisoner Dilemma games and on every specific move of many-move games. If your opponent makes a cooperative choice, you will propagate two more offspring by adopting a selfish strategy than by adopting a cooperative strategy. If your opponent

makes a selfish choice, you will propagate one more offspring by adopting a selfish strategy than by adopting a cooperative strategy. On these contingencies, selfish strategies become more frequent, or evolve, and cooperative strategies go extinct. It is on this logic that the eminent evolutionary theorists I cited earlier concluded that moral dispositions cannot evolve.

Let us conclude without further ado that selfish dispositions have evolved in all species. All animals, including humans, behave selfishly in some circumstances. Viewed in evolutionary terms, individuals invoke selfish strategies in the “if” conditions in which they paid off in ancestral environments, which are modeled in one-move Prisoners Dilemma games. However, it does not follow that such strategies are optimal in all conditions. Indeed, as I will explain, there is little question that other, less selfish and more moral, strategies, are equipped to reap greater adaptive benefits than selfish strategies in some “if” conditions or contexts, and that such strategies have evolved.

### **The Evolution of Deference**

Players in Axelrod and Hamilton’s model of natural selection were of equal power, but in the groups formed by most social species members vary in power. Imagine that you are competing with a member of your group for a resource, say some food or a potential mate. The strategy that is most optimal for you will depend on your relative power. If you are more powerful than your competitor, your best bet might well be to adopt a selfish strategy and take more than your share. However, if you are weaker than your competitor, this strategy could be lethal. In such cases, discretion could well be the better part of valor. Better to subordinate your interests to those who are more powerful than you and live to fight another day.

There is a spate of evidence that deferential dispositions have evolved in many species (see Alcock 1998, for a review). Primates are especially sensitive to indications of social power (Boehm, 2000; Cheney & Seyfarth, 1985). Deferential dispositions are rooted in fear systems, with perhaps a touch of awe. Dominance and submission, especially in males, is regulated by increases and decreases in androgens.

Deference is linked to morality in all traditional psychological models. Piaget (1932) suggested that the fear and awe young children feel for the apparent

omnipotence and omniscience of adults plays a pivotal role in determining their moral orientation. Freud (1925) believed that children internalize the superegos of their parents because they fear being punished by them. Learning theorists such as Aronfreed (1968) have argued that fear-reduction plays an important role in the process of socialization. Kohlberg (1984) defines his first stage of moral development in terms of “avoidance of punishment and the superior power of authorities” (p. 624).

### **The Evolution of Cooperation**

As implied in Prisoners Dilemma simulations of evolution, unconditionally cooperative strategies cannot evolve because they are susceptible to exploitation by selfish strategies. However, as revealed in Axelrod and Hamilton’s (1981) research, a conditionally cooperative strategy called Tit for Tat can. Tit for Tat is based on the decision-rule, “open with a cooperative move, then copy the move made by your partner.” Although Tit for Tat loses to selfish strategies on the first move, it cuts its losses quickly and draws with them on the remaining moves. In a population containing a sufficient number of Tit for Tat strategies, Tit for Tat can defeat selfish strategies in the long run even though it does not defeat them on any move, by reaping the relatively high-payoff benefits of drawing with other Tit for Tat strategies, or cooperating with cooperators. As the proportion of Tit for Tat strategies increases in the population, so also do the payoffs from the strategy. In general, to evolve, a strategy must pay off well against itself.

Following the publication of Axelrod and Hamilton’s (1981) findings, investigators changed parameters in Axelrod and Hamilton’s game and examined the fecundity of other strategies. In general, the closer the environments approximated the actual conditions of evolution, the greater the benefits of conditionally altruistic strategies. For example, games that allowed for the inevitable errors that occur in social exchanges found that strategies such as “Two Tits for a Tat”, “Generous Tit for Tat”, “Contrite Tit for Tat”, and “Forgiving Tit for Tat” fared better than Tit for Tat because they were equipped to break self-defeating blood feuds precipitated by one selfish mistake (see Krebs, 2000a, and Ridley, 1996, for reviews of relevant research). Simulations that enabled players to observe other players and keep track of their strategies (called “image scoring”) favored the evolution of altruism through indirect reciprocity (Nowak & Sigmund, 1998). Allowing players to trade resources of relatively little value to them for

resources of greater value to them is even more conducive to the evolution of cooperation (Trivers, 1971). Janicki (2004) reviews evidence in support of the conclusion that mechanisms that induce people to invest heavily in friends have evolved because of the long-term adaptive benefits of such relationships. A friend in need is a friend indeed.

Dugatkin (1997), Trivers (1971), and others have adduced evidence that mechanisms giving rise to reciprocity have evolved in many species. The exchange of blood in vampire bats (Wilkinson, 1990) is a particularly interesting example. There can be no question that cooperation was instrumental in the evolution of the human species (Tooby & DeVore, 1987). To quote Leakey and Lewin (1977), “throughout our recent evolutionary history, particularly since the rise of a hunting way of life, there must have been extreme selective pressure in favor of our ability to cooperate as a group...The degree of selective pressure toward cooperation...was so strong, and the period over which it operated so extended, that it can hardly have failed to have become embedded to some degree in our genetic makeup” (p. 45).

In his classic work on moral development, Piaget (1932) adduced data in support of the idea that hierarchical relations between parents and children tend to give rise to a “heteronomous” moral orientation based on “constraint”, or deference, whereas egalitarian relations among peers help children acquire a more autonomous moral orientation based on cooperation. Based on observations of boys playing marbles in school yards, Piaget concluded that children discover the benefits of cooperation and reciprocity naturally, without intervention from adults. Modern researchers such as Youniss, McLellan, and Strouse (1995) have adduced evidence in support of these ideas.

I believe that Piaget’s conclusion that children tend to adopt different strategies in relations with adults from those they adopt in relations with peers is correct; however, I believe it is more a matter of degree than a dichotomy. A growing body of evidence suggests that new-born infants inherit mechanisms that induce them to cooperate with their care-takers in mutually-beneficial ways: “As 20 years of infancy research have persuasively documented, babies appear to be born into the world with a cognitive system preadapted to mutuality of expectation, to intersubjectivity, and to interaction” (Wozniak (1993, p. 82). And although relations among children may, in general, be more egalitarian than relations between

children and adults, children differ in power and form dominance hierarchies (Strayer & Strayer, 1976), as depicted dramatically in *Lord of the Flies*.

### **The Evolution of Care**

Deferential and cooperative dispositions go a long way in accounting for moral behaviors, but according to some scholars they do not go far enough. Psychologists such as Gilligan (1982) have criticized models of moral development for neglecting care-oriented dispositions, which they argue play a more prominent role in the moral orientation of women than of men. Evolutionary perspectives lead us to suspect that the original function of care-oriented mechanisms was to induce parents to nurture their offspring.

In Axelrod and Hamilton’s (1981) Prisoner Dilemma simulations of social evolution, players reproduced asexually and offspring entered new generations as self-sufficient adults (or more exactly as strategies or genes). In contrast, in the real world, most species reproduce sexually and offspring are born dependent or altricial. If parents who inherited mechanisms that induced them to care for their offspring contributed more offspring to future generations than parents who inherited more selfish mechanisms, caring mechanisms would have evolved. Evolutionary theorists such as Flinn & Low (1986), McDonald (1997) and Lancaster and Lancaster (1987) have suggested that mechanisms giving rise to exceptionally high levels of parental investment have evolved in the human species due in large part to the prolonged dependency of human infants.

Infants from many species form attachments to their caretakers. Bowlby (1980) has accounted for such attachments in terms of their adaptive value. Developmental psychologists tend to assume that children’s attachment to their parents stems from the same psychological system as parents’ attachment to infants. However, McDonald (1997) has adduced evidence that the psychological mechanisms that mediate attachment behaviors in infants are regulated primarily by fear and are oriented to safety (in my terms, rooted in deferential dispositions), whereas parental investment is regulated primarily by positive feelings of warmth (in my terms, rooted in caring dispositions). The biological function of attachment behaviors in infants is to foster their own survival. The biological function of attachment behaviors in parents is to propagate the complement of their genes invested in their offspring. There is a great deal of evidence that the type of attachment children form

with their parents exerts a significant effect on their social and moral development (see Thompson, 1998, for a review).

With respect to morality, the problem with dispositions that induce parents to nurture their offspring is that the caring behaviors to which they give rise are restricted to their offspring. However, in one of the most influential insights in evolutionary biology, Hamilton (1964) explained that the principle that accounts for the evolution of parental investment can be extended to explain why members of many species help other relatives as well. What counts in evolution is the propagation of genes. If individuals share genes, then each is able to propagate replicas of his or her genes by helping the other, just as parents propagate replicas of their genes by helping their offspring. Thus, according to Hamilton (1964), behaving altruistically pays off biologically when the fitness costs to altruists are less than the fitness benefits to recipients multiplied by their degree of relatedness, or the probability that they possess replicas of the helper's genes. Recently, Sober and Wilson (1998) have explained how the range of recipients who evoke care-oriented behaviors could be expanded even further through group selection.

Research on empathy and altruism is consistent with the conclusion that the care-oriented mechanisms inherited by humans may be activated by a relatively wide range of recipients (see Batson, 1991). Recipients need not necessarily be related to donors, they need only possess the characteristics that constituted cues to kinship in ancestral environments - cues such as similarity, familiarity and proximity. Further, there is evidence that people identify with ingroups, favor ingroup members, and are disposed to sacrifice their interests for the sake of the group (see Brown, 1986, and Tajfel, 1985, for a review of supporting evidence). The key challenge for those who would foster morality by inducing people to care for others is to find ways to expand the circle of people equipped to activate the mechanisms.

### **The Evolution of Docility**

Another limitation of Axelrod and Hamilton's (1981) game theory simulations of evolution was that strategies were fixed at the beginning of the game and could not change. There was no room for learning. Clearly, learning and modeling play an important role in the acquisition of morality. The explanatory power of any model of moralization that neglects these processes will be limited. Viewed in phylogenetic context, human infants are unique in their capacity to

learn and human adults are unique in their capacity to teach.

Evolutionary models of morality are often contrasted with social learning models, giving rise to nature versus nurture dichotomies. However, knowledgeable theorists from both schools of thought know better. Consider for example the following statement by Bandura, (1989, p. 52).

Genetic factors and neural systems affect behavioral potentialities and place constraints on capabilities. Both experiential and physiological factors interact, often in intricate ways, to determine behavior. Even in behavioral patterns that are formed almost entirely through experience, rudimentary elements are present as part of the natural endowment...[A]ction patterns regarded as instinctual, because they draw heavily on inborn elements, require appropriate experience to be developed. Sensory systems and brain structures are alterable by environmental influences....[D]ichotomous thinking, which separates activities neatly into innate and acquired categories, is seriously inaccurate.

A biological analysis of morality draws our attention to the fact that the mental mechanisms that induce humans to teach and the mental mechanisms that enable them to learn are evolved mechanisms. Simon (1990) has outlined the adaptive benefits of "docility", which he defines as a disposition that induce individuals to learn what others teach and to believe what others say. In refinements of Axelrod and Hamilton's (1981) game theory simulations, researchers found that strategies such as "Pavlov" that contained the capacity to learn from experience were able to defeat less flexible strategies (see Ridley, 1997). Indeed, even fixed strategies such as Tit for Tat can be defined in terms of principles of learning such as "if a behavior is followed by punishment, change it; if a behavior is followed by reward, repeat it." Modeling enables individuals to avoid the costs of trial and error by copying behaviors that have biologically beneficial consequences.

Although Simon (1990) argued that docile dispositions are designed in ways that induce individuals to behave in altruistic ways that decrease their fitness, I believe the logic of evolution and evidence from social learning theory support the conclusion that humans are selective in the people they model and the behaviors to which they conform.

As suggested by Flinn and Alexander (1982), social learning mechanisms are guided by rules such as “imitate those who appear successful”, and “accept advice and instruction from those with an interest in [your] success.” Similarly, Boyd and Richerson (1985) have suggested that social learning mechanisms are affected by “biases”, which incline people (a) to copy those who are fit, admired, respected, of high status, wise and so on, (b) to copy behaviors that have the greatest promise of enhancing their fitness, and (c) to copy behaviors that are most frequent in the population. Consistent with these suggestions, researchers have found that the probability of modeling is affected by factors such as the status, nurturance, and power of models, the similarity between observers and models, and whether the behaviors emitted by models are rewarded or punished (Burton & Kuncze, 1995, p. 151-152).

### Summary

In a chapter in the *Handbook of Child Psychology* dealing with socialization, Bugental & Goodnow (1998) suggest that “socialization processes may be parsed into different social domains on the basis of biological influences” (p. 408). They argue that the “often observed differences in socialization in different contexts (e.g., attachment-based relationships, compliance-oriented socialization, negotiated relationships between peers, etc.) may have evolved as a function of the distal advantages they served” (p. 409). Although I divide the social domains in a slightly different manner from Bugental and Goodnow, (1998) (viewing attachment in children as stemming primarily from the deference system and viewing social identity as an aspect of the care and cooperation systems), our approaches converge. The basic point of agreement is that to understand how children acquire a sense of morality, it is important to recognize that moral dispositions stem from several evolved psychological systems that are designed in different ways and activated in different social contexts.

### Individual differences

Although evolutionary models are concerned mainly with species-specific characteristics, they are attentive to variations in genomes that contribute to individual differences in evolved dispositions. Researchers have found that several aspects of temperament, such as warmth, emotional responsiveness and fearfulness are highly heritable in both children and adults (Plomin, DeFries, & McClearn, 1997; MacDonald, 1997). Evolutionary theorists do not assume that genotypic

differences induce differences in behavior directly. They assume that although it is possible to account for substantial portions of the variance in phenotypic behaviors by attending to genetic differences among individuals, genes interact with a host of other factors to produce their effects. Behavioral geneticists such as Plomin, DeFries, & McClearn (1997) assume that inherited differences induce individuals to behave in ways that affect their social environments, which in turn produce differences in social behavior.

### MAKING SILK PURSES FROM SOWS’ EARS: CULTIVATING MORALITY

Virtually all evolutionary theorists would agree that to foster the development of healthy individuals, we must ensure that the complement of genes they inherit are nurtured in optimal inter-uterine environments. A large proportion of social problems are caused by a small number of abnormal individuals, many of whom were doomed from the start because they were assaulted in the womb. As exemplified by fetal alcohol syndrome, teratogenic agents can drastically disrupt social adjustment. Less dramatically, factors such as excess emotionality in mothers, low birth weight, complications during childbirth, and stress in families—all of which are more prevalent in lower socioeconomic strata than in higher socioeconomic strata—are associated with behavior disturbance later in life (Field, Dempsey & Shuman, 1981; Kopp, 1983).

All children have the right to a healthy prenatal environment, injury-free childbirth, and supportive early environment, and social systems equipped to ensure that all pregnant mothers receive optimal care pay off for everyone in the end. Societies should establish ways of identifying pregnant women and ensuring that they and the infants they bear receive the resources they need. Pregnant women have no more right to abuse the fetuses they carry than mothers have to abuse newborn infants. If necessary, alcoholic or drug addicted mothers who cannot kick their habits should be institutionalized, monitored, and nurtured while they are pregnant for the sake of their children.

Some people think that preserving the sanctity of genes, and perhaps programs of eugenics, are just about the only guidance that evolutionary approaches have to offer those motivated to improve the human condition. This belief is based in the assumption that evolutionary models posit a direct, unalterable relation between genes and behavior (Lickliter &

Honeycutt, in press). However, as implied in the model of morality I have advanced in this chapter, evolutionary approaches do not make such genetically deterministic assumptions (see Krebs, in press, for a review of evidence relevant to this issue). Evolutionary psychologists assume that genes interact with extra-genetic factors to design psychological mechanisms that operate in terms of “if-then” decision-rules. The “ifs” in question refer to environmental conditions, which is mainly what those who seek to cultivate morality have to work with.

As explained by Bugental and Goodnow (1998),

The utility of biological approaches comes from the window they provide on the basic “design” features in the ways we are set up for socialization. They suggest the distinctive regulatory processes that govern socialization within different domains, thus accounting for the limitations consistently found in providing any general-purpose explanations for socialization processes....An awareness of biological influences on social processes allows us insight into why some socialization processes are more easily implemented than others” (p. 414).

In terms of the present model, socializing agents have four main regulatory processes to work with. The key challenge for those who seek to cultivate morality is to structure environments in ways that constrain the development and activation of selfish mechanisms and foster the development and activation of deferential, caring, cooperative and docile mechanisms. In large part, fostering the development of mechanisms of morality entails expanding and refining the “if” conditions that activate them.

There are two important implications of the evolutionary model I am advancing. I have discussed the first, that the best way to induce people to behave morally is to structure their environments in ways that ensure that behaving morally pays off better than behaving immorally, or more exactly in ways that activate mechanisms that fostered the inclusive fitness of their hominid ancestors. The second implication is that it is misguided to attempt to induce people to behave in ways that are inconsistent with evolved dispositions and strategies. Although it might be appropriate for philosophers to derive ideal moral principles—what people ought to do—with no constraints from what people can do, it is a waste of time for socializing agents to attempt to induce

people to behave in accordance with moral principles that are inconsistent with the dispositions they inherit. Better to recognize that people inherit dispositions that fostered their biological interests and structure social systems in ways that induce members to foster their interests in cooperative rather than exploitative ways. Indeed, it could be argued that inducing individuals to sacrifice their interests for the sake of others subverts moral systems by disrupting the balance of justice.

### **Social Domains**

As individuals develop, they participate in an increasingly broad array of groups and social systems. The developmental ecologist Bronfenbrenner (1995) has categorized such groups in terms of four embedded systems. The microsystem contains families, schools, peer groups and neighborhoods. The mesosystem contains interactions among aspects of the microsystem. The exosystem contains social institutions such as health care, day care, welfare, legal assistance and the mass media. Finally, at the broadest level, the macrosystem contains societal and cultural-level influences such as urbanization and global economies.

Most interventions aimed at cultivating morality have focused on the microsystem; and within the microsystem, most interventions have focused on parent-child relations (Weissberg & Greenberg, 1998). From an evolutionary perspective, this focus is justifiable. In general, the smaller and simpler the group, the easier it is to ensure that cooperative strategies pay off better than selfish strategies. Families are an especially promising context for the cultivation of morality because (a) members have a vested genetic interest in each other’s welfare, (b) family members interact with each other repeatedly, and (c) the strategies family members invoke are relatively easy to track.

It also is relatively easy to cultivate morality in institutions such as day care centers and schools because the groups in question are relatively closed systems in which it is relatively easy to institute systems of cooperative exchange and hold those who cheat on them accountable. Such groups are probably similar to the groups in which cooperative mechanisms evolved. However, as the size of groups increases into societies and nations, the groups diverge from the structure of ancestral groups in which cooperative mechanisms were selected and designed, and therefore from the conditions that activated them. Although the payoffs from

cooperative exchanges tend to increase with the size and complexity of a group, so also does the difficulty of reckoning just deserts and ensuring that cheaters do not prosper. I turn now to a consideration of the types of intervention that, from the perspective of the evolutionary analysis I have advanced in this chapter, seem optimal for the cultivation of morality in families, child care centers, schools, and societies.

### **Cultivating Morality in Families**

Virtually all socialization theories assume that early interactions between parents and children play the central role in children's acquisition of morality, and this assumption is supported by a spate of research (see Grusec & Lytton, 1988, and Kochanska & Thompson, 1998, for reviews). In most socialization theories, parents are viewed as the instruments of socialization and children are viewed as the objects. The task of parents is to teach their children what it means to be moral and to train them to behave accordingly. In contrast, from the perspective of evolution, families are groups that contain members who are evolved to behave in ways that enhanced the inclusive fitness of their ancestors. Families are like other groups in that they usually contain hierarchical relations between parents and children as well as more egalitarian relations among siblings, and members adopt strategies to foster their interests. But the family is a special group in at least three ways. First, it is everyone's first group. Second it is most people's most stable group. And third, in general the biological costs of treating family members selfishly and the biological benefits of treating family members altruistically are greater than they are in other groups because, as explained earlier, helping relatives may foster the helpers' genetic interests.

As explained by Trivers (1972) and others, from the moment of conception, offspring and parents compete with one another for resources and cooperate for mutual gain. Each party attempts to interact with the other in ways that, in effect, activate the psychological mechanisms that benefit him or her. The outcomes each experiences are a function of the interaction between the strategies each invokes. Neither overly selfish nor overly generous strategies are optimal. The key lies in constructive coordination that produces mutual gains.

### **Parenting Practices**

There is wide agreement among developmental psychologists that the key to the moralization of children lies in parenting practices. The general

conclusion reached by research on the effects of parenting styles is that overly authoritarian and overly permissive styles are less conducive to the development of morality than more authoritative styles (see Grusec & Lytton, 1988, and Hoffman, 1999 for reviews). With respect to discipline, power assertion and love withdrawal have been found to be less effective than induction. Modeling has been found to exert a significant influence on prosocial and antisocial behavior (Grusec & Lytton, 1988).

From the perspective of the present analysis, all forms of discipline have their place. Power assertion affects deferential dispositions. Love withdrawal affects caring dispositions and attachment. Induction affects cooperation. Modeling affects the docility system. The challenge for parents is to create the "if" conditions that induce optimal activation of all four systems. Research on the effects of parenting practices suggests some guidelines.

With respect to deference, investigators have found that "discipline practices that are completely devoid of force are ineffective because they elicit insufficient anxiety to signal the importance of the parental intervention, to orient the child to the message, and to provide motivation to change. But too much force can be detrimental to moral internalization" (Kochanska & Thompson, 1998, p. 68). To be effective, punishment must be relatively moderate, consistent, and administered as immediately as possible after transgressions (Aronfreed, 1968). If punishment consistently follows transgressions, children are quick to learn the "if" (you misbehave), "then" (you will be punished) contingencies.

With respect to care, researchers have concluded that a "mutually-responsive, positive parent-child orientation promotes the child's broad internalization of parental values" (Kochanska, 1997, p. 64). Too much care, or pampering, fosters the cultivation of selfishness. Too little care, or neglect, fosters insecure and avoidant attachments, which are associated with subsequent social problems.

With respect to induction, evolutionary models view the ideas parents preach to children as signals designed to, in effect, persuade and manipulate them (Krebs & Janicki, 2003). From an evolutionary perspective, attempting to persuade children to sacrifice their interests for the sake of others should be less effective than attempting to persuade them to foster their interests in mutually-beneficial ways, which often entails explaining why cooperative strategies pay off better than selfish strategies in the

long run. Finally, with respect to modeling, children should be affected by the biases described by Flinn and Alexander (1982) and Boyd and Richerson (1985).

The idea that successful parenting involves the optimal activation of several evolved systems implies a more complex model of moralization than traditional models that focus on only one system and attempt to identify the best form of discipline. And this is only the beginning. The practices that parents employ are affected by their temperaments and by the temperaments of their children. For example, parents who inherit psychological systems that react strongly to stress are inclined to employ strong forms of physical punishment (Rothbart & Ahadic, 1994) and children who experience relatively little distress following misdeeds tend to evoke harsh forms of punishment (Dienstbier, 1984). And different parenting practices are optimal for children with different temperaments. For example, Kochanska, (1997) found that gentle, non-power-oriented discipline was optimal for the development of conscience in temperamentally fearful children, but caring and cooperative parenting practices worked better for temperamentally fearless children.

From the perspective of the evolutionary model I am advancing, the key to successful parenting lies in the coordination of the psychological systems possessed by parents and children in mutually beneficial cooperative exchanges. Authorities on child development rooted in other theoretical approaches have reached similar conclusions. For example, Maccoby (1984) concluded that “parent-child socialization [involves] inducing the child into a system of reciprocity—the formation of a mutually binding, reciprocal, and mutually responsive relationship” in which “partners in a communal or mutually reciprocal relationship feel invested in and responsible for each other’s welfare” (Kochanska & Thompson, 1998, pp. 64-65).

Finally, to add another layer of complexity, practices that were optimal at one stage of development may not be optimal at other stages. As concluded by Bugental and Goodnow (1998),

Relationships between the same individuals operate according to different “rules” based upon the changing nature of their relationship and the changing nature of the immediate context. Thus, the interaction between a given parent and child may be governed by attachment principles when the

child is highly dependent (common in infancy and recurring at later times of stress). The struggles between the parent and the same child as a toddler (or early adolescence) may more typically involve power-based principles. During collaborative activity (work or play) involving the parent and the child, interactions are more likely to involve principles of reciprocity. At other times, the dyadic relationship may be based upon their shared identity as a family or as community members. (p. 400-401)

### **Implications for Public Policy**

The public policy implications of this analysis involve investing in interventions that foster effective parenting throughout the life span. Cowan, Powell and Cowan (1998) reviewed research on the effectiveness of parenting interventions in the United States. Consistent with the present model, they reached the following three conclusions. First, “it makes good sense to increase efforts devoted to the creation of prevention programs for parents. Interventions early in the life of a family, or early in the development of family problems, give promise of staving off more serious problems farther along the family developmental trajectory” (p. 50). Second, “recent research on the effects of parenting programs provides support for complex, contextual, systemic theories of parenting effects” and “multidomain interventions”. And third, “children at each age and stage have characteristic developmental tasks...and parents need to learn to respond appropriately to infants, toddlers, and adolescents, because what works and can be understood at one age may not be effective at another” (p. 53).

In my view, social systems should be structured in ways that ensure that all potential parents receive instruction on pregnancy, childbirth, and optimal parenting practices. Literature and videotapes on these topics should be made available to all newlyweds. Experts should visit the homes of all pregnant women and new mothers to ensure they receive the assistance they need.

### **Cultivating Morality Outside the Family**

Many people assume that it is unnatural for people other than mothers to assume responsibility for rearing children, but this assumption is false. To quote Lamb (1998), “Exclusive maternal care throughout the period of dependency was never an

option in what Bowlby (1980) called the “environment of evolutionary adaptiveness,” and there are no societies today in which it is the typical practice. Indeed, exclusive maternal care...was seldom an option in any phase of human history; it emerged as a possibility for a small, elite segment of society during one small portion of human history.” (p. 76). What is natural is for children to interact with and be cared for by a group of people that include their parents, older siblings, members of their extended families, and non-relatives from their ingroups (Whiting & Whiting, 1989).

### **Child care Centers**

When I try to imagine large scale interventions equipped to foster moral development in young children who do not have access to interactions with siblings, peers, and adults other than their parents, I can think of none with more potential than the implementation of child care centers, especially for high risk kids. Child care centers are pervasive in Scandinavian and Eastern European countries, where citizens believe that societies have a responsibility to foster the welfare and socialization of their children. Good child care centers provide a safe environment for children, adequate nutrition, plentiful resources, and stimulating activities. At child care centers, children interact with adults, older children, and younger children, who may come from many ethnic groups and cultures. The child care profession tends to attract caring adults who receive training in parenting practices. Such workers serve as models for children and their parents. In child care contexts, children can be offered guidance in cooperative activities and ways of resolving their conflicts of interest. Deferential, cooperative, caring and docile mechanisms can be activated in optimal ways.

This potential notwithstanding, research on the effects of day care on children’s attachments, peer relations, and social development has produced mixed results. Based on an extensive review of the literature, Lamb (1998, pp. 115-116) reached the following conclusions. First, relationships with peers and care providers “can affect children’s later social behavior, personality maturity, and cognitive development for good or for ill, depending on the quality and stability of these relationships.” Second, as we might expect, “the quality of care received both at home and in alternative care facilities appears to be important.” “Poor quality care can have harmful effects on child development.” “Improvements in quality appear to have significant positive effects even at the highest end of the [age] range sampled, suggesting there is no

threshold beyond which quality of care no longer matters.” And finally, “nonparental care is likely to be most beneficial when it complements the quality of family care most successfully, and most likely to be harmful when there are differences in ideology, belief, and behavior.”

In a nutshell, evolutionary theory encourages child care workers to structure their centers in ways that enable the children to discover the benefits of cooperation and the costs of selfishness. If children with day care experience are less compliant than those reared exclusively at home, this may not be a bad thing. According to many theorists, autonomy, coupled with respect for the rights of others, is essential for moral development.

### **Peer relations**

According to Piaget (1932) and other developmental psychologists, peer relations are critical for the cultivation of autonomous and cooperative moral orientations. The paucity of peers in relatively small modern families may constitute a constraint on moral development. Children in such families may become good at interacting with (and manipulating) adults, but fail to develop the social skills necessary to coordinate with peers. For optimal moral development, I believe children should interact with older and younger peers from an early age. For children who do not have brothers and sisters, this could take place within the family context, extended families, preschool play groups, neighborhoods or child care centers. As children grow older, they are inevitably faced with the challenge of developing cooperative relations with their peers at school.

### **Schools**

Most people define the role of schools in socializing children in terms of induction. They assume that teachers should teach moral values to children in much the same way they teach other subjects. In my view, this assumption is dead wrong. To teach morality to children, teachers must emphasize the problems morality is equipped to solve—problems that pertain to the maximization of mutual benefits through cooperation and effective ways of resolving conflicts of interest. This said, I believe even such pragmatic forms of induction are relatively impotent. Children may learn them in the same way they learn other subjects taught in schools, and they may be able to repeat them when asked, but by and large, they remain on a verbal plane, exerting relatively little effect on behavior.

To be effective, school programs designed to foster moral development must offer opportunities for students to actively practice the principles they and others preach. Role-playing opportunities take one step in this direction. Structured team activities and games take another, but such steps are relatively small. Following the failure of school-based moral discussion groups, moral educators guided by cognitive-developmental theories concluded that, to constitute effective agents of morality, schools needed to be restructured in ways that actively involved students in the decision-making processes (Higgins, Power & Kohlberg, 1984; Kuhmerker, 1991). To this end, Kohlberg and his colleagues designed alternative schools in which students were given responsibility for creating and enforcing their own rules. Children who participated in such democratic schools displayed significantly greater gains in moral development than children who attended more conventional schools (Higgins, Power & Kohlberg, 1984).

The alternative schools created by Kohlberg and his colleagues were designed in ways that are consistent with interventions implied by evolutionary models of morality. Members of groups participate in the creation of rules that foster their mutual interests. Such participation encourages identification with the group, which lowers the threshold for the activation of care-oriented behaviors. Participants decide on the sanctions that follow violations of rules and acts of selfishness. As members of cooperative systems in which they have invested, students are more highly motivated to uphold the system by detecting, reporting, and punishing transgressors. Kohlberg and his colleagues found that, in addition to advances in moral development, students in such schools acquired a stronger sense of responsibility (Higgins, Power & Kohlberg, 1984).

### **Societies**

From the perspective advanced in this chapter, interventions designed to cultivate morality in societies should be designed in accordance with the same principles as interventions designed to cultivate morality in child care centers, schools and other institutions. Members of societies should create maximally beneficial systems of cooperation and derive rules that define their rights and duties in such systems. Societies should structure their environments in ways that make following rules and upholding cooperative systems pay off better than cheating, which among other things necessitates the

creation of mechanisms equipped to detect and to punish cheaters. As discussed, the gains in trade from systems of cooperation in large-scale societies are potentially greater than the gains in trade from cooperative exchanges in smaller groups. Common currency such as money enables all members of societies to, in effect, trade items of relatively little value to them for items of greater value. However, it is significantly more difficult to implement such systems of cooperative exchange in large-scale societies than in smaller groups for at least four reasons.

First, it is more difficult to activate care-based mechanisms in large societies than it is in smaller groups because fewer members of large societies possess characteristics such as similarity, familiarity and proximity that constitute the “if” conditions for the activation of caring mechanisms. Second, it is significantly more difficult to define rights and duties and reckon costs and benefits in large societies than in smaller groups. Consider, for example, the difference between bartering with another individual or engaging in a Tit for Tat exchange and deciding whether carpenters should make more dollars per hour than mechanics. Third, it is more difficult to detect cheaters in large groups practicing indirect reciprocity than it is in smaller groups practicing direct reciprocity. Finally, members of societies have less incentive to punish transgressors. In general, societies do a very poor job of ensuring that punishments are administered as immediately as possible after transgressions in consistent and fair ways. Courts take years to make decisions. Criminals who are caught in the act are often set free. Wealthy transgressors buy their way out of penalties.

I believe that the ambivalence members of societies have toward the detection of transgressions and the imposition of punishments is built into the mechanisms they inherit. Consider, for example, people’s ambivalence to photo radar and traffic tickets. We have the technology to detect every single speeder or red-light runner. If drivers knew for sure they would be caught and punished for violating traffic rules, they would obey them. Thousands of lives would be saved. Yet people resist such sure-fire methods of detection. If you ask them why, they will allude to Big Brother types of danger. Such arguments are warranted when systems of detection are imposed on citizens by totalitarian authorities, but are not, as far as I can see, appropriate when people decide to impose such systems on themselves for their mutual benefit. Evolutionary theory implies that the source of such ambivalence lies in the constraints

such interventions impose on the freedom of individuals to exploit systems of cooperation.

Reporting transgressors and administering punishments entails a cost—sometimes small and sometimes large. In relations between individuals in relatively small groups, the costs of detecting transgressions and administering punishments may be outweighed by the gains. It is relatively easy to discover that someone has cheated you one on one, and it is relatively easy to punish the cheater by getting even, severing relations with him or sully his reputation through gossip. However, the larger the group and the more indirect the effects of one member's behavior on others, the less the value to each member of detecting transgressors, and the more reluctant members are to assume responsibility for administering punishments (Boyd & Richerson, 1985). Individuals also experience an ambivalence with respect to transgressions committed by members of their ingroups against other groups or society at large. Codes of silence often prevail.

**Overcoming obstacles to the cultivation of morality in societies.** Evolutionary theory offers four forms of guidance for those who seek to foster morality at a societal level. First, societies should expand the circle of those who activate caring mechanisms, which can be accomplished by increasing the prevalence of kin recognition cues. For example, we could expand the number of people perceived as similar by labeling them in the same ways (e.g., Canadians), by encouraging them to share forms of dress and culture, by teaching them the same language and dialect and so on. We could foster people's sense of proximity to and familiarity with members of their societies through the mass media (see Huston & Wright, 1998, for a review of the literature on the impact of the mass media).

Second, societies should ensure that members participate in the derivation of the rules that guide the allocation of resources. Permitting powerful authorities to define rules opens the door to dictatorship and totalitarianism. Rules that are imposed from the outside tend to be only as effective as the sanctions invoked to enforce them, and they tend to drive transgressions underground. People need to be as directly involved as possible in the creation of the rules that govern the systems of cooperation in which they participate. Delegating this responsibility to elected officials tends to depersonalize it.

Third, societies should create effective ways to detect and punish cheaters. Detection can be improved through methods such as video surveillance, photo radar, Block Watches, DNA analysis, alcohol detectors in cars, publication of the identities of repeated sex offenders, and through programs such as America's Most Wanted. The effectiveness of punishment can be enhanced by reforming the court system in ways that increase the immediacy and consistency of punishment.

Finally, societies should maximize the exposure of their citizens to moral models. Inasmuch as docility mechanisms are activated by frequently-observed behaviors or behaviors emitted by successful and powerful models, and inasmuch as members of societies are exposed to such models through the mass media, societies are in a position to regulate the models to which their members are exposed.

### Summary and Conclusion

In this chapter, I offered an explanation for the origin of morality in the human species and explored the implications of this explanation for the cultivation of morality in today's world. I suggested that the biological function of morality is to help members of groups reap the benefits of cooperative exchanges by helping one another and resisting the temptation to behave selfishly. I questioned the conclusion that all evolved dispositions are inherently selfish in nature, explained how deferential, cooperative, caring and docile dispositions could evolve, and adduced evidence that such dispositions give rise to moral behaviors.

In the second half of the chapter, I explored the implications of the evolutionary analysis advanced in the first half of the chapter for the cultivation of morality. I argued that the key to the cultivation of morality lies in determining the "if" conditions that activate moral dispositions and structuring environments in ways that optimize their activation. In large part, this entails ensuring that cooperative strategies pay off better than selfish strategies. Noting that individuals become members of increasingly large and complex groups as they develop, I offered reasons why it is easier to cultivate morality in family, child-care, and school contexts than in society at large. We have the wherewithal to fashion silk purses from the sows' ears of evolution, but to accomplish this challenging task, we must determine realistically what we have to work with and design interventions accordingly.

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