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Parting with illusions in evolutionary ethics

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Abstract. I offer a critical analysis of a view that has become a dominant aspect of recent thought on the relationship between evolution and morality, and propose an alternative. An ingredient in Michael Ruse's 'error theory' (Ruse 1995) is that belief in moral (prescriptive, universal, and nonsubjective) guidelines arose in humans because such belief results in the performance of adaptive cooperative behaviors. This statement relies on two particular connections: between *ostensible* and *intentional* types of altruism, and between intentional altruism and morality. The latter connection is problematic because it makes morality redundant, its role having already been fulfilled by the psychological dispositions that constitute intentional altruism. Both behavioral ecology and moral psychology support this criticism, and neither human behavioral flexibility nor the self-regard/other-regard distinction can provide a defense of the error theory. I conclude that morality did not evolve to curb rampant selfishness; instead, the evolutionarily recent 'universal law' aspect of morality may function to update behavioral strategies which were adaptive in the paleolithic environment of our ancestors (to which our psychological dispositions are best adapted), by means of norms more appropriate to our novel social environment.

''*We read the world wrong and say that it deceives us*.''Sir Rabindranath Tagore, *Stray Birds*, lxxv.

Introduction

Philosophers and scientists engaged in the application of evolutionary theory to human morality are often said to be involved in ''evolutionary ethics''. Although this discipline encompasses a broad range of philosophical viewpoints (reviewed in Maienschein and Ruse (1999), Thompson (1999)), in recent years the label has often come to be associated with a particular theory: the ''error theory'' or ''sociobiological meta-ethics'' propounded most notably by Michael Ruse (Ruse 1986a, 1986b, 1989, 1991, 1995, 1999). A body of critical discussion has developed around this theory (e.g., Rottschaefer and Martinsen (1990), Collier and Stingl (1993), Campbell (1996), Joyce (2000)). This literature has been concerned in large part with how an evolutionary view of morality sits with such concepts as truth and falsity, objectivity, and justification. This paper contributes to a different strand of the discussion by examining the adequacy of the proposed connection between evolution and morality which forms the basis for Ruse's ethical theory (e.g., Ayala (1987), Rottschaefer and Martinsen (1990), Sorell (1991), Rolston (1999)). I will

argue that Ruse's theory mischaracterizes this connection and the evolutionary significance of morality in guiding human behavior, and I will propose a direction for evolutionary ethics that overcomes these problems.

The evolutionary ethics 'error theory'

An error theory asserts that we tend to believe in the truth of a statement *S*, despite the fact that *S* is false. Specifically, the evolutionary ethics error theory holds that attention to evolutionary theory and the apparent course of human evolution provides an explanation of why we humans tend to believe what we do regarding morality; but it also provides a basis for the assertion that these beliefs are false. Ruse claims that this view literally turns moral philosophy into science (Ruse and Wilson 1986), since the error theory is based squarely on empirical evidence provided by evolutionary biology.

The following is a summary of Ruse's formulation of the error theory:[1]

P1 – In many social animals, cooperative behavioral strategies have evolved because of their adaptive value on the basis of natural selection among individuals.

P2 – Belief in moral (prescriptive, universal, and nonsubjective) guidelines has arisen in humans because such belief results in the performance of adaptive cooperative behaviors.

P3 – We have no reason to believe that moral guidelines are both adaptive and true.

C – Moral guidelines are an (adaptive) illusion, our belief in them false.

P1 is the evolutionary account, the result of empirical studies and evolutionary inference. P2 establishes a thesis as to the evolution of morality. P3 prepares the way for the meta-ethical error theory made explicit in C, which has also been called meta-ethical skepticism, nihilism, or subjectivism. The word ''true'' in P3 can be reinterpreted as ''having the foundation or status they purport to have in our consciousness'', and so is not meant to prejudge the matter of whether moral judgments are primarily about truth and falsity. The conclusion from this line of reasoning is that moral guidelines tend to appear, for good evolutionary reasons, inescapable and categorically binding on us; but that in fact this appearance is a sham, maintained by natural selection because it insures that individuals cooperate with each other and therefore leave more offspring. If this thesis is true, the field of meta-ethics is fundamentally misguided, since the history of our search for the foundation of morality and the meanings of moral concepts is the history of people investigating an illusion of their own (genetic and ontogenetic) creation. Ruse's expositions of this error theory, especially (1995), may be consulted for further clarification of the position and the concepts involved.

This paper will focus on an analysis of P2 of the above reasoning, where the nature of the connection between evolution and morality is postulated. Two logical

[1] Prof. Ruse has endorsed the following outline and my further descriptions as an accurate representation of his view (1997, personal communication).

steps are implicit there in the link between 'human cooperative behaviors' and 'moral guidelines', the first of which will be dealt with in the next section, and the second in the following section.

From ostensible altruism to intentional altruism

To illustrate the first logical step implicit in P2, one may distinguish between two senses of the term 'altruism'. The first refers to social behaviors that prima facie incur a fitness cost to the performer and provide a benefit to another individual. This sense may be designated as *ostensible altruism*, which is roughly what Voorzanger calls 'bioaltruism' (1984). It is the sense of 'altruism' that is used by observers of social interactions who are ignorant of intentions and of effects on reproductive success. The altruism being 'ostensible' and the cost 'prima facie' mean that the behavior *appears* (to some observer) to incur a net cost to the performer, which is the only reason it is called 'altruism'. In reality the prima facie cost may persist after scientific investigation, or it may not; appearance may or may not be actuality. If a cooperative behavior appears to an observer to incur a net cost to the performer, that behavior can be labeled ostensible altruism. This sense of 'altruism' is often used, but it is only useful as a heuristic or a stimulus to research, rather than as a biological category, because it focuses on appearances rather than reality and therefore obscures the difference between adaptive and maladaptive behaviors. Saying that a behavior is ostensibly altruistic implies that we are ignorant about whether it incurs a fitness cost to the performer. This does not render the term useless, however, for many terms in science imply ignorance but are valuable for their heuristic or research-stimulating qualities ('paradox' being another in behavioral ecology).

To date, the evidence of behavioral ecology suggests that all typical instances of ostensible altruism in nature are adaptive relative to available alternatives. In each case either the perceived cost is outweighed by inclusive fitness benefits (Hamilton 1964; Grafen 1982; Voorzanger 1994), or else the performer is being manipulated or is constrained by a tradeoff, and has no recourse to more adaptive alternatives (Stearns 1992; Kempenaers and Sheldon 1996; Payne 1998). (Evolutionary ethicists have generally not considered the latter class as providing examples of altruism, however.) In accordance with evolutionary theory and evidence from behavioral ecology, then, ostensible altruism will be assumed for now to be adaptive behavior, although this is an empirical matter and subject to further research. At least one caveat is important here: because of evolutionary lag, the current behavior of an organism might not be adaptive relative to alternatives. In terms of the error theory outlined above, ostensible altruism refers to the 'cooperative behaviors' described in P1.

Ostensible altruism is the result of behavioral observation, and leaves open the question of what kind of intentions or motivations are involved. As such it is distinct from what can be called *intentional altruism*, a phenomenological term dealing with the intentions of agents, which are not directly dealt with in behavioral studies. A conventional dictionary definition of 'altruism', such as ''regard for others as a

principle of action'' (*OED*), approximates this intentional sense of the term. Intentional altruism has to do with feelings of devotion and attitudes of concern for others' welfare. An act is altruistic in this sense if and only if the actor's intent was generous or other-regarding. It has nothing to do with whether a behavior incurs a fitness cost to the performer, or even whether it appears to do so. Just as the intentions of agents are not directly relevant to ostensible altruism, the outward manifestations of behavior are the wrong place to focus when discussing intentional altruism per se. Ostensible altruism and intentional altruism, though often occurring together, are logically independent. If a behavior that benefits another individual seems to bear a cost to the performer, it may be called ostensible altruism. If a behavior is performed out of a motivation to care for others, it is intentional altruism. Intentional altruism is perhaps best applied to humans, where we are most aware of the nature of intentionality. Whether intentional altruism in humans is associated with a net fitness cost to the 'altruist' has not been established empirically.

The first step undertaken by P2 is that *intentional altruism* arose in humans as a mechanism for *ostensible altruism*. Certain cooperative behaviors constitute adaptive traits; in order for humans to exhibit these traits, psychological dispositions of concern for the welfare of others evolved. Emotions like sympathy and affection are therefore natural to humans. They have been maintained by natural selection because they result in behaviors that are adaptive.

This link between ostensible altruism and intentional altruism is actually better supported than one would gather from reading much evolutionary ethics literature, which generally mentions only nepotism and dyadic ''you scratch my back and I'll scratch yours'' reciprocity before moving away from mechanisms to the more philosophical aspects of the evolution-morality relationship. Many typical human altruistic impulses are not explained by those two mechanisms. The last thirty years have, however, seen considerable development in the explanation of typical human emotional responses and cooperative tendencies. Indirect reciprocity, where fitness benefits or costs return to an individual, e.g. via reputation in one's community, has broad implications for human cooperation, and provides an evolutionary explanation of the human tendency to perform cooperative acts that involve neither close relatives nor one-to-one reciprocity (Alexander 1979, 1987, 1992). Other mechanisms for the generation of cooperative behaviors have been proposed in studies of reliable communication (Zahavi 1995), by-product mutualism (Brown 1987), and manipulation (Dawkins 1982). Group or multi-level selection theory may provide another way of viewing these same mechanisms (Goodnight and Stevens 1997). Such mechanisms and theoretical developments provide testable predictions regarding the behavioral tendencies of humans in particular circumstances. A unified evolutionary theory of human cooperative strategies could be tested by comparing it to the typical observed structure of human cooperation (including its variability). The proposed link between ostensible and intentional altruism would be supported insofar as actual human altruistic tendencies are found to be measured, directed, and even witheld in accordance with the theory of human cooperative strategies.

Here, in lieu of such a theory, this link between ostensible and intentional altruism

will be assumed. Darwin's suggestion will be granted that ''the social instincts both of man and the lower animals have no doubt been developed by the same steps'' (Darwin (1871): 98). An implication of this statement is that human emotional tendencies towards concern for others' welfare evolved to coordinate our behavior with individual reproductive success. As hunger leads us to eat, and sex drives (at least used to) lead us to procreate, it is plausible that sympathetic emotions lead us to cooperate. To guide our performance of actions that are adaptive but ostensibly altruistic, we have developed altruistic intentional states.

From intentional altruism to morality?

To this point evolution has been used to explain the source of our typical psychological dispositions and behavioral tendencies, and has linked emotion and behavior in a standard way for evolutionary studies of animal behavior (Alcock 1993). Intentional altruism is the psychological facilitator of ostensibly altruistic behavior. However, the evolutionary ethical theorist realizes that intentional altruism and morality are not the same thing. The former constitutes mere sentiments or desires, whereas the latter has more of the nature of a code of laws that are universal, prescriptive, and non-subjective (*sensu* Ruse). Even the emotivist about morality recognizes the need to distinguish moral sentiments from other kinds of sentiments. Part of what we mean by 'moral' is precisely that these sentiments purport to have some priority over others. We don't just feel like doing altruistic behavior *x*; we feel, or think, that we *ought* to do *x*, and that others in present circumstances should do it too, and that we have no choice about this obligation, and so on. So far in the logic of the evolutionary ethics error theory, no explanation has been provided for this *moral* significance or distinction we tend to associate with certain dispositions and behaviors. No explanation has been provided for why tend to think some options are *right* and others *wrong*. Right and wrong and a sense of binding obligation are part (but not all– see, e.g., Foot (1978)) of the subject matter of ethics, so a connection between our altruistic motivating sentiments and the institution or experience of right and wrong is a crucial step in the production of an evolutionary ethical theory. The second step inherent in P2 intends to provide this connection. In the discussion that follows, 'morality' will refer to this institution or experience of right and wrong (a moral law), in order to be consistent with Ruse's use of the term.

The evolutionary ethics error theory holds that morality, with its peculiar attributes such as prescriptivity, universality, and non-subjectivity (*sensu* Ruse), evolved solely to maintain the edifice of adaptive cooperation. In the words of Ruse, ''Unless we think morality is objectively true– a function of something outside of and higher than ourselves– it would not work.'' (Ruse (1989): 268). Morality, on this view, functions as a motivation for ostensible altruism.

One way to assess this premise is to attempt to match the requirements of morality with some level of understanding of human cooperative strategies, and see if they align well (e.g., Trigg (1982), Rottschaefer and Martinsen (1990)). A major problem with the error theorist's hypothesis, however, is evident before any such analysis is

performed: the hypothesis simply makes morality redundant. The evolutionary ethics error theorist enlists the moral law to take up a post that is already occupied. The caring sentiments natural to our species (intentional altruism) can be felt and discussed without reference to apparently objective moral guidelines. The very function of those sentiments, it has been granted, is to achieve adaptive behaviors that are ostensibly altruistic. Therefore we might expect neuroscientists to discover the proximate neural mechanisms for biases in our minds that predispose us to be social beings, having certain altruistic tendencies and performing certain cooperative behaviors. We are motivated to be cooperative by social desires. ''No man is an Island'', not because we all obey universal prescriptions to this effect; in fact, such prescriptions need not enter into it. Rather, no man is an island because ''every man is a piece of the Continent'', because our emotional dispositions reflect our evolved nature as social and cooperative beings. Given the role of intentional altruism, humans would be cooperative regardless of whether we recognized an apparently objective moral law demanding it of us. The evolutionary ethics error theory therefore fails to explain morality.

For evidence of the redundancy of morality in the evolutionary ethics error theory, one can look first to the ostensible altruism in nature outside of our species. Cooperative behaviors are widespread in nature at all levels of the hierarchy of psychological complexity (Alcock 1993). The forms of this ostensible altruism include the nepotism and reciprocity that evolutionary ethicists use to ground human morality (de Waal 1996). Nonhuman animals still care for their young and other relatives, show restraint in fighting, give warning calls, protect each other, share food, and contribute other valuable services to others. Why humans should have to possess a radically different mechanism from these other animals in order to achieve results of the same general type, requires some explanation. The evolutionary ethicist who postulates an illusion of objective moral guidelines as a vehicle for adaptive behavior is proposing a biologically unprecedented mechanism for a purpose which is achieved regularly in nature by much more straightforward means.

Further evidence can be provided from the human species by the moral psychologist. A direct implication of supposing that the performance of ostensible altruism requires morality, is that cooperative actions are always prompted by adherence to the moral law. This is of course not the case. Few would claim that such attitudes as sympathy, *esprit de corps*, or family devotion are always, or even often, adopted because we believe that a transcendent imperative exists for us to do so. These attitudes nevertheless facilitate behaviors that would be characterized as ostensible altruism. People do many things *not for moral reasons*, which produce ostensibly altruistic, adaptive, cooperative behavior. Recent work in social psychology has supported this contention by experimentally separating adherence to moral guidelines from empathetic feelings as motivations for altruism (Batson et al. 1995; Batson and Moran 1999). Moreover, two recent analyses of motivations for charitable giving have found that although an adherence to moral duty sometimes plays a role, it often does not, and other significant motivations are unrelated to a recognition of moral norms (Ray 1998; Ribar and Wilhelm 2002).

Ostensible altruism places no unique requirements on our biological constitution.

It does not require a radically different solution to what is in fact a very common type of problem in nature, in humans as well as in other organisms: the problem that an organism must exhibit certain behaviors in certain circumstances, and alter or restrain those behaviors as circumstances change. We can be moved to exhibit ostensible altruism in the same sense as we are moved to seek a mate, to eat, to assert our position in relevant hierarchies, to defend ourselves, and to do many other things– without the intrusion of a putative universal law.

What about human behavioral flexibility?

Two reasons have been proposed as to why we need the force of morality in order to behave in an adaptive manner. The first is our behavioral flexibility. Humans are unprecedented in our cognitive complexity and the breadth of the field of possible courses of action. However, this does not explain why imagined objective guidelines are therefore necessary to the achievement of cooperative behaviors. Humans, with all our complexity and flexibility, can be hungry, tired, angry, in love, jealous, impatient, afraid, hurting, or otherwise desirous or faced with situations characterized by the necessity to make a decision and exhibit some type of behavior. We perform appropriately without the aid of any grandiose illusions with regard to these things. This is not to say that we do not moralize about them; rather, we do not require, and so we do not construct, psychological illusions of transcendent requirements specifically to fulfill those needs. Feeding is obviously adaptive, and mechanisms (e.g., hunger, set eating times) are in place to assure such behavior in humans, although this behavior can be and often is overridden by individuals in various circumstances. Mechanisms are in place for many other adaptive human behaviors as well, such as mating, for which we have sex drives, notions of attractiveness, and courtship rituals. For no other behavior that humans exhibit, regardless of how complex and flexible it requires us to be, have philosophers or biologists suggested that we need the manufacture and elaboration of a set of beliefs of the sort that some claim to have evolved for the sake of achieving ostensible altruism.

What about the other-regarding nature of altruism?

The second way in which evolutionary ethicists may attempt to explain why cooperation alone, of all our adaptive behaviors, must be achieved through the construction of a false belief system, relies on a distinction between a ‘self-regard’ that comes most easily to us because of our evolutionary heritage, versus an ‘other-regard’ that is required by morality. On this view, our ancestors were so used to being selfish that they needed moral guidelines to counteract that natural tendency.

This reasoning makes a category mistake, however. The ‘self-regard’ and the ‘other-regard’ in this argument operate on two different levels that are logically independent of each other. Like all successful organisms, we humans tend to be ‘self-regarding’ in our behavior in a sense related to fitness, but to say this conflicts

with other-regarding intentions is to confuse behavioral effects with psychological states. Adaptive behavior, whether we find it useful to call it 'altruism' or not, is by definition *not* other-regarding in an evolutionarily relevant sense. The fact that such behavior may be accompanied by or motivated by attitudes of concern for others neither changes this fact nor conflicts with it.

Conflating evolutionary and psychological levels of self- or other-regard possibly stems from our tendency to overintellectualize our experience. Our beliefs about our situation, such as opinions that our behaviors are other-regarding or self-regarding, do not matter to our evolved desires. We do not get hungry, for an analogous example, because we *think* that food is good for us. We may or may not have beliefs as to what food does for us. Regardless, the ultimate (evolutionary) reason why we want to eat is simply because food *is* good for us, whether we know it or not, and so our adapted constitution produces the appropriate desires in us. Evolutionary theory applied to human psychology predicts that our sentimental and behavioral tendencies will track our biological interests. Such theory provides no basis for distinguishing between 'self-regarding' and 'other-regarding' types of adaptive behavior; we must seek elsewhere for such a basis. All adaptive behavior is self-regarding in the only sense that is relevant to evolutionary analysis, which is of course the level at which the behavior is being explained here. In accordance with evolutionary theory, our constitution provides us with emotions and other incentives for performing certain actions that are (or were) adaptive, regardless of whether we happen to consider them 'self-regarding' or 'other-regarding'. In fact, we are likely to have performed those actions in an adequate fashion long before we could reflect with such philosophical subtlety on their nature. This contrasts sharply with the view of the error theory, that our reflections on the nature of our actions pose a problem for achieving adaptive behaviors, a problem that can only be solved by the evolution of radically new psychological mechanisms.

Our tendencies towards certain attitudes and actions, far from depending on our opinions or intentions as to who is to benefit from them, generally operate regardless of whether we think anyone will benefit, including ourselves. Often the existence of an emotional incentive easily overrides notions we might have of benefit. We can wish to do something solely for the emotional payback, regardless of any known benefits. Why do we like candy? We may not even know about sugar. We may not know that ice cream, chocolate bars, and soft drinks are exploiting an old emotional incentive for gaining adequate nutrition. We like such things for the incentive our adapted constitution has produced in us (sweet taste), regardless of the benefit. And, of course, we can like them even if sugar in these modern forms is not really a benefit. The same argument can be made regarding sexual activity. These cases demonstrate that we can even be disposed to do things which we know could actually jeopardize our personal welfare more than aid it. Another example of this is some instances of violence, such as small-scale fights over trivial matters. Our evolved constitution might predispose us to aggression, and we may never stop to think that appeasing our (or someone else's) angry desires in a particular instance may not be in anyone's best interest. The point here is not that behavior in these cases is maladaptive, for we can use adaptive examples too (caring for my young

may not be in *my* best interest as an individual, but I do it anyway, even realizing that fact). Rather, the point is that our knowledge of which actions will benefit ourselves is not at the helm when we feel moved to exhibit these behaviors. Likewise, we can easily be predisposed to attitudes and actions on behalf of others, when these return fitness benefits to us. Evolutionary ethicists in favor of the error theory must misuse the self-other distinction, and underestimate the persuasive powers of our nervous and endocrine systems, in order to provide a case that morality's ultimate function is to curb our selfishness and ensure that we cooperate.

Morality's efficacy as a vehicle for ostensible altruism

If the relationship between morality and adaptive cooperation were as simple as the error theory proposes, much of human moral experience would be left unexplained. For instance, morality is characterized by a great deal of reflection and deliberation which accompanies the making of moral decisions. As Hare (1981) notes, morality has an intuitive level but also a critical level. On the basis of evolutionary theory, one would expect the critical level to consist of exploration of the facts of the matter (e.g., who is involved, who will find out, what is the situation). The resulting decision should be based on a cost-benefit analysis; and, when pressed, our intuitions would provide a rough and ready approximation to this. Throughout recorded history, however, the deliberation that has accompanied moral decision has often been much more abstract and not restricted to the facts of the matter (e.g., contemplation of the foundations of morality). The more such thought is necessary to the practice of morality, the less efficient and therefore the less adaptive the mechanism is. It is therefore understandable why Ruse says that ''too heavy an emphasis on thought in morality worries me'' (Ruse (1995): 266). A simpler, more straightforward desire to perform certain altruistic behaviors, together with the capacity to perform a (perhaps nonconscious (Alexander 1992)) cost-benefit analysis on the basis of the facts of the situation, is a more parsimonious and more adaptive, as well as biologically well precedented mechanism, than the time-consuming, often confusing and sometimes agonizing deliberative capacity that we call morality. If morality, as distinct from our psychological tendencies to be altruistic in certain circumstances, arose simply as a motivator of ostensible altruism, its efficiency is dubious when one looks at the history of moral philosophy, which is characterized by millennia of the moral capacity challenging and often bewildering humans. Similar obstacles to efficient and consistent action do not seem to plague other behavioral traits, traits which do not seem to be different from ostensible altruism in terms of the psychological mechanisms that would be required to carry them out.

Incidentally, the existence of cooperating members of society who are no longer, or never were, under the influence of an illusion of objective, prescriptive, nonsubjective moral guidelines, is in itself evidence against the necessity of such an illusion for cooperation. That a realization of this has not sent proponents of the error theory back to the drawing board is curious, for the history of moral philosophy, and even society at large, is replete with such examples. Subjectivists, relativists, and skeptics

may be a minority, but is there any evidence that they are sociopaths, or people who either refuse or are unable to cooperate in the sense of performing adaptive social behaviors? If ostensible altruism can be achieved just as easily when 'the cat is out of the bag', i.e. when we no longer believe that a transcendent law obtains, then the main thesis that ''human beings function better if they are deceived by their genes . . . '' (Ruse and Wilson (1986): 425) is undermined. On the other hand, if we *do* function better to any extent when deceived, this is an empirical statement, and evidence to this effect must be adduced. The evolutionary ethicist must show that relativists, skeptics, subjectivists, including all who believe in the error theory, are less generous members of society. In fact no one has yet produced evidence to this effect. This is to be expected, because if we jettison moral objectivity we are still left with that ubiquitous mechanism for achieving adaptive behaviors, desire.

Towards an investigation of the ultimate function of the moral law

The thesis that morality did not evolve to curb the selfish course of human behavior is perhaps counterintuitive. Moral guidelines create internal conflict when they compete with the gratification of contrary desires. Because of this, we slide easily from a belief that morality *does* often contradict selfish desires, to the belief that without moral guidelines we would be creatures of unrestrained immediate self-gratification, incapable of cooperative or sympathetic activity. This mistake opens the door for the evolutionary ethics error theory, but both behavioral ecology and human moral psychology attest that this slide is in fact a mistake. The premise that we humans are constantly going against our self-interest in order to adhere to moral laws that contradict all of our other motivations is perhaps attractive because it is self-serving (it makes all of us out to be moral heroes); but upon closer scrutiny this premise fails. In fact, other species, our own ancestors, and many people today, cooperate in ways that are adaptive because of the intentional altruism that is part of their evolved nature, and yet do not recognize an objective or universal moral law which demands such behavior. Even those people who do recognize such a moral law are motivated to cooperate and care in other ways than just a sense of obligation to follow that law.

Does morality have an adaptive function, then, and if so what is it? Some would argue that it does not have one. However, the significant areas of concordance in moral intuitions across cultures, and the persistence of certain intuitions across gradients of time, socioeconomic condition, and educational level, justifies the search for a functional explanation, which is likely to be evolutionary (Alexander 1971; O'Neill and Petrinovich 1998). Although I will postpone detailed consideration, here I will sketch a direction in which evolutionary ethics might profitably proceed. In approaching this matter, a theorist must of course address the fact that morality does indeed guide human behavior– none of what has been said here disputes this fact. However, the foregoing argument suggests that morality must guide action in a more complex way than has been suggested by the error theory.

A greater degree of understanding of the origin, and thus any biological function,

of morality may be gained from paying closer attention to the fact that moral experience in a broader sense did not spring forth at once in all of its current complexity, but rather developed over time from an ancestral state, as did all of our other cognitive and cultural attributes (Alexander 1987; Tomasello 1999). A broad consideration of morality would include a range of aspects, some ancient and some of more recent origin. Nepotism, for instance, is one of the most ancient aspects of social behavior, one which we share not only with chimpanzees but also with ants (Hamilton 1964). Thus the moral requirement to care for one's family must be understood in the broader context of nepotism among all animals that associate preferentially with kin (Alexander 1974). On the other hand, the consideration of all humans as morally equivalent, such that ethical theories can identify an individual with a letter *A* or *x*, has achieved the high level of importance it plays in our moral codes much more recently. The early human situation depended much less on such a notion, since almost all of our daily interaction would have been with members of our own kin group. Today both nepotism and moral egalitarianism operate in the moral experience of many people, although they do not have the same origin.

If many of our psychological tendencies were shaped in a past situation that was different from that of today in some relevant ways, as the evidence suggests is the case (Barkow et al. 1992), this raises the possibility that the internal conflict that accompanies the making of some of our moral decisions may result from a discordance between modern moral codes and the set of behavioral strategies that would have been adaptive during most of our evolutionary history. If this is true, one would predict a correlation between the degree of internal conflict we experience with regard to a particular moral guideline, and its variance from the adaptive strategies of hunter-gatherers living in small kin groups. Moreover, the moral law, in Ruse's sense of a set of universal, prescriptive, and nonsubjective guidelines, is likely a recent phenomenon, postdating the hunter-gatherer period. This concept of a moral law may function to update our behavior to the present social environment from that of our paleolithic ancestors. A much older predisposition to obey parents and other leaders real and imagined may have been co-opted, with existing sources of moral authority being replaced by a universal God or a value-laden universe. A prediction from this hypothesis of the moral law as an updating mechanism, is that moral guidelines should play a larger role in motivating a behavior the more different that behavior is from what would have been adaptive in the ancestral environment. For example, Jesus did not need to give, and so did not give, an exhortation to care for members of one's own social group. Rather, one of his most cited commands (in the Good Samaritan parable, Luke 10:30–37) was to care for strangers, even those with varying religious beliefs or ethnicity. This command is at variance with evolved predispositions, and was required to steer behavior in a manner more appropriate in the modern situation.

Whether this hypothesis is generally true of morality depends on, among other things, a demonstration that modern moral norms suspected to be at variance with older predispositions, are actually adaptive in a post-agricultural, sedentary social environment. For if they are not adaptive, the alternative hypothesis would be favored that this prescriptive aspect of morality has no adaptive function, and is

instead the product of a cultural evolution that has become disconnected from individual reproductive success (Dawkins 1976). A place to begin such a test is an analysis of how an adherence to these moral norms feeds fitness benefits back to the performer through reputation and social status (Alexander 1987).

On this view, if our genes have constructed anything to ensure cooperation, it is the set of emotional predispositions that were labeled ''intentional altruism'' earlier in this paper. These developed over hundreds of thousands, perhaps even millions of years. Prescriptive, universal, and nonsubjective moral guidelines, on the other hand, are not a genetically induced illusion. Rather, they are hypothesized to be the product of the period since the agricultural revolution, when our culture began to change too quickly to be effectively tracked by organic evolution. Although there may have been some genetic change in adaptation to the new social situation, modern aspects of morality may largely function as a cultural surrogate for genetic adaptation, analogous to parental instructions that children not eat too much candy. Much of what is distinctive about the morality of modern humans may enhance individual fitness by modifying behavior appropriately for the novel social environments we have created for ourselves.

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