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The Natures of Universal Moralities

Bailey Kuklin[†]

One of the abiding lessons from postmodernism is that reason does not go all the way down.¹ In the context of this symposium, one cannot deductively derive a universal morality from incontestible moral primitives,² or practical reason alone.³ Instead, even reasoned moral systems must ultimately be grounded on intuition,⁴ a sense of justice. The question then

[†] Professor of Law, Brooklyn Law School. I wish to thank the presenters and participants of the Brooklyn Law School Symposium entitled "Is Morality Universal, and Should the Law Care?" and those at the Tenth SEAL Scholarship Conference. Further thanks go to Brooklyn Law School for supporting this project with a summer research stipend.

¹ "Simplifying to the extreme, I define *postmodern* as incredulity toward metanarratives." JEAN-FRANCOIS LYOTARD, *THE POSTMODERN CONDITION: A REPORT ON KNOWLEDGE* xxiv (Geoff Bennington & Brian Massumi trans., 1984). "If modernity is viewed with Weberian optimism as the project of rationalisation of the life-world, an era of material progress, social emancipation and scientific innovation, the postmodern is derided as chaotic, catastrophic, nihilistic, the end of good order." COSTAS DOUZINAS ET AL., *POSTMODERN JURISPRUDENCE* 16 (1991). "In short, we have reached a point where theory has effectively turned against itself, generating a form of extreme epistemological scepticism which reduces everything—philosophy, politics, criticism and 'theory' alike—to a dead level of suasive or rhetorical effect where consensus-values are the last (indeed the only) court of appeal." CHRISTOPHER NORRIS, *WHAT'S WRONG WITH POSTMODERNISM?* 4 (1990). See Scott Fruehwald, *The Emperor Has No Clothes: Postmodern Legal Thought and Cognitive Science*, 23 GA. ST. L. REV. 375, 377-79 (2006).

² "[M]oral primitive concepts . . . are epistemically basic and transparent." Benjamin C. Zipursky, *Rawls in Tort Theory: Themes and Counter-themes*, 72 *FORDHAM L. REV.* 1923, 1927 (2004). See JEFFRIE G. MURPHY, *Three Mistakes About Retributivism*, in *RETRIBUTION, JUSTICE, AND THERAPY* 77, 77 (1979) ("[T]he claim is a primitive and unanalysed proposition which is [said to be] morally ultimate," such as "happiness is good", "freedom is to be respected.").

³ The most famous attempt at deriving morality from practical reason is by Kant. See IMMANUEL KANT, *PRACTICAL PHILOSOPHY* (Mary J. Gregor, trans. & ed. 1996). That "evolutionary ethics', that is, an ethical theory which incorporates to various degrees the evolutionary history of our specifically moral traits and behaviors" may lead to "a recognizably Kantian cognitivist evolutionary metaethics," see Frederick Rauscher, *How a Kantian Can Accept Evolutionary Metaethics*, 12 *BIOLOGY & PHIL.* 303, 303 (1997).

⁴ "We could never get started on everyday moral reasoning about any moral problem without relying on moral intuitions." Walter Sinnott-Armstrong, *Framing Moral Intuitions*, in 2 *MORAL PSYCHOLOGY* 47, 47 (Walter Sinnott-Armstrong ed., 2008). Haidt has been a leader in developing this idea. He asserts: "(1) Moral beliefs and motivations come from a small set of intuitions that evolution has prepared the human mind to develop . . . and (2) moral judgment is a product of quick and automatic

arises, whence come moral intuitions?⁵ Evolutionary biology offers answers.⁶ In this article, I examine the main ones advanced by evolutionary theory. Since the products of evolutionary principles are contingent on chance and the environment in which the evolution occurs, I speculate on the range of moral intuitions consistent with these principles. To give the punch line first, the possible range is broad, and the actual range is an empirical question that is very difficult to tease out. Nevertheless, the law is deeply concerned with the range because moral intuitions often facilitate, and sometimes frustrate, social and legal goals. But first, let us begin with the basic principles of evolution.

In what follows, I first introduce the evolutionary theories advanced as grounding moral dispositions: kin selection, reciprocal altruism, and sexual selection. Let me emphasize that this is a survey only, for there is a vast body of literature on the reach and complexities of these theories. But an introduction is enough to get to the next step. Then, assuming that human cognition is fully up to the task and that chance and circumstances were accommodating, I identify the range of likely emotions and moral impulses stemming from these theories. Finally, I relax these assumptions and speculate on how this may affect evolved moral impulses.

intuitions that then give rise to slow, conscious moral reasoning.” Jonathan Haidt & Fredrik Bjorklund, *Social Intuitionists Answer Six Questions About Moral Psychology*, in 2 MORAL PSYCHOLOGY 181, 181 (Walter Sinnott-Armstrong ed., 2008). “Most likely, moral emotions help guide moral judgments by attaching value to whichever behavioral options are contemplated during the tackling of a moral dilemma.” Jorge Moll et al., *The Cognitive Neuroscience of Moral Emotions*, in 3 MORAL PSYCHOLOGY 1, 5 (Walter Sinnott-Armstrong ed., 2008).

⁵ Hauser argues that, if there are moral universals, there are at least three possibilities: first, “a nativist position that puts precise moral rules or norms in the newborn’s head;” second, “the view that we are born with abstract rules or principles, with nurture entering the picture to set the parameters and guide us toward the acquisition of particular moral systems;” and third, “the view that our moral faculty lacks content but starts us off with a device that can acquire moral norms.” MARC D. HAUSER, MORAL MINDS 165 (2006). He prefers the middle view. *Id.*

⁶ “Moral philosophers from Plato . . . on down have relied on their intuitive sense of right and wrong to guide them on their attempts to make sense of morality. The relevance of science then is that it can tell us how our moral intuitions work and where they come from.” Joshua D. Greene, *The Secret Joke of Kant’s Soul*, in 3 MORAL PSYCHOLOGY, *supra* note 4, at 35, 67. For an intriguing discussion of human’s evolved capacities to employ moral and legal reasoning, see Robin Bradley Kar, *The Deep Structure of Law and Morality*, 84 TEX. L. REV. 877 (2006).

I. NATURAL SELECTION

While few, if any, reputable biologists currently deny that all life forms are subject to Darwinian natural selection, the extent to which human behavior conforms to this principle has been more controversial. In recent decades, several disciplines have been founded or informed by the proposition that human behavior and emotions, like human physical and cognitive traits, are subject to the filter of fitness. Among these disciplines are evolutionary psychology, Darwinian anthropology, behavioral biology, human ethology, and behavioral ecology.⁷

The basic tenets of Darwinian evolution are rather simple and straightforward. Because more organisms are produced than can be supported by available resources, not all of them will prosper and reproduce. Those with heritable traits that provide advantages in the struggle to survive and reproduce are more likely to expand the number of their genes in the gene pool. The basic requisites for natural selection, then, are three: variation, differential fitness, and heritability.⁸ Some characteristics within a species must vary; these qualities must differ in their ability to facilitate reproduction; and, these qualities must be passed on to descendants.⁹ Under the metaphor of the “selfish” gene,¹⁰ a particular gene, or form of it (allele), is more likely to expand its number in the gene

⁷ See, e.g., JOHN CARTWRIGHT, *EVOLUTION AND HUMAN BEHAVIOR* 48-50 (2000); EDWARD O. WILSON, *CONSILIENCE* 168 (1998); N.A. Chagnon & W. Irons, *Preface*, in *EVOLUTIONARY BIOLOGY AND HUMAN SOCIAL BEHAVIOR* xi, xii (Napoleon A. Chagnon & William Irons eds., 1979); Owen D. Jones, *Law and Evolutionary Biology: Obstacles and Opportunities*, 10 *J. CONTEMP. HEALTH L. & POLY* 265, 270-71 n.13 (1994); Mary Maxwell, *Introduction*, in *THE SOCIOBIOLOGICAL IMAGINATION* 1, 22 (Mary Maxwell ed., 1991); Donald Symons, *On the Use and Misuse of Darwinism in the Study of Human Behavior*, in *THE ADAPTED MIND* 137, 146 (Jerome H. Barkow et al. eds., 1992). See generally ULLICA SEGERSTRÅLE, *DEFENDERS OF THE TRUTH: THE BATTLE FOR SCIENCE IN THE SOCIOBIOLOGY DEBATE AND BEYOND* 316-20 (2000). For simplicity, I will refer to these fields of study generally as evolutionary psychology.

⁸ See, e.g., DAVID M. BUSS, *EVOLUTIONARY PSYCHOLOGY* 7 (1999); STEPHEN JAY GOULD, *Prologue*, in *BULLY FOR BRONTOSAURUS* 11, 11-13 (1991); Richard C. Lewontin, *Adaptation*, *SCI. AM.* 213, 220 (Sept. 1978).

⁹ See, e.g., STEPHEN JAY GOULD, *Prologue*, in *BULLY FOR BRONTOSAURUS* 11, 11-13 (1991); JOHN MAYNARD SMITH & EORS SZATHMARY, *THE ORIGINS OF LIFE* 1-3 (1999); Richard C. Lewontin, *Adaptation*, *SCI. AM.* 213, 220 (Sept. 1978). See generally ERNST MAYR, *WHAT EVOLUTION IS* (2001).

¹⁰ See RICHARD DAWKINS, *THE SELFISH GENE* (new ed. 1989).

pool if it confers characteristics to the organism—by itself or with other genes—that further successful reproduction.¹¹

One of the most difficult issues facing evolutionary principles is the question of altruistic behavior. For if the evolution of behavior is driven by the metaphorical selfish gene, it would seem that any genetic disposition to sacrifice one's own welfare for that of another would be selected out by the relentless forces of competition. Yet moral behavior, perhaps by definition, requires the willingness to put someone else's interests ahead of one's own.¹² Otherwise, one is simply acting prudently, in one's own self-interest, not morally. Evolutionists offer various theories to counter this intuition disfavoring altruism. The two most common are kin selection and reciprocal altruism. Another one, sexual selection, though having garnered less attention than the others, is also worthy of consideration, especially since it may offer the prospect of the most general form of moral impulses.

All three theories are subject to the vagaries of chance and historical contingency. The trajectory of evolution is far from predetermined. Evolution works on the genetic materials at hand. If the fortuities of the reproductive and mutational processes do not produce a particular beneficial gene at an appropriate time and place that succeeds in enriching the gene pool, the forces of evolution may move on in a different direction altogether, forever foreclosing ultimately fitter possibilities. Evolution cannot anticipate future benefits. In conjunction with the environment, evolutionary processes slap together a phenotype, perhaps jerry-built from the genes available, and let the fates decide. Good enough, not perfection,

¹¹ See, e.g., JOHN C. AVISE, *THE GENETIC GODS* 107-11 (1998); RICHARD DAWKINS, *RIVER OUT OF EDEN* 5 (1995); BOBBI S. LOW, *WHY SEX MATTERS* 19-20 (2000).

¹² See, e.g., Julia Annas, *Virtue Ethics and the Charge of Egoism*, in *MORALITY AND SELF-INTEREST* 205, 205 (Paul Bloomfield ed., 2008) (referring to "the very basic thought that ethics is fundamentally about the good of others, not my good"); Richard Joyce, *Response to Nichols and Katz*, in 3 *MORAL PSYCHOLOGY*, *supra* note 4, at 419, 425 [hereinafter Joyce, *Response*] (while recognizing room for some, but not entirely, "self-promoting moral values and duties", asserting that "moral normativity centrally involves other persons being loci of value and imposers of duties"); David Schmidtz, *Because It's Right*, in *MORALITY AND SELF-INTEREST*, *supra*, at 79, 81 ("Moral reasons are *categorical*, which means they have a claim on us independent of how they appeal to our interests and desires."). For views that morality has room for self-interest, see *infra* note 34 and accompanying text. Haidt, a leading researcher of moral psychology, offers this definition of morality: "morality is any system of interlocking values, practices, institutions, and psychological mechanisms that work together to suppress or regulate selfishness and make social life possible." Jonathan Haidt, *What Makes People Vote Republican?*, <http://www.alternet.org/story/98902/>.

rules.¹³ For example, even though it would be beneficial to humans to have a dog's ability to smell or an eagle's ability to see, natural selection will not produce these cognitive abilities if chance, circumstances, and tradeoffs are not favorable. Moreover, cognitive traits affect further natural selection. In the context of moral impulses, we can imagine that behavior and moral dispositions would be somewhat different if humans had the unerring ability to discern deceit or cooperativeness in others.

The evolutionary role of chance and circumstance deserves special emphasis. The fittest genome will leave no descendants in the gene pool if it resides in a child who is struck down by lightning. Similarly, the greatest potential football player will not prosper by virtue of his unique skills in a society that does not play the game.¹⁴ Even the greatest intelligence may be a handicap if it manifests in an outcaste in a rigid, intolerant regime.¹⁵ As for any emotional or moral genetic dispositions, the difference may be substantial depending on whether the traits evolved while humans lived in small, isolated, closely-related clans, rather than large, interrelating, diverse tribes, or whether the resources available were abundant and dependable rather than scarce and unpredictable.¹⁶ Hence, successful predictions of possible moral

¹³ Even the human eye, its "perfection" often advanced as evidence of creationism or intelligent design, is quite flawed, as I, with my far-sightedness, astigmatism, and floaters can affirm, but I nevertheless am better off with my faulty vision than without it. See, e.g., RICHARD DAWKINS, CLIMBING MOUNT IMPROBABLE 138-97 (1996) (discussing the fitness value of a wide-range of visual acuity); RICHARD DAWKINS, RIVER OUT OF EDEN 76-78 (1995) (same). In general, selection favors improvement irrespective of "perfection". See, e.g., ERNST MAYR, TOWARD A NEW PHILOSOPHY OF BIOLOGY 156 (1988) ("Darwin . . . was aware of the fact that the perfecting of adaptations needs to be brought only to the point where an individual is 'as perfect as, or slight more perfect than' any of its competitors"); ERNST MAYR, WHAT EVOLUTION IS 281-82 (2001); Robert Kurzban, *Biological Foundations of Reciprocity*, in TRUST AND RECIPROCITY 105, 110-11 (Elinor Ostrom & James Walker eds., 2003) (noting that cognitive systems "simply have to have been better than any other candidate systems at solving a specific adaptive problem").

¹⁴ As one sportswriter said of Joe Namath, "If it weren't for football, Namath wouldn't have been anything but a local yokel back home in Pennsylvania." JOE WILLIE NAMATH & DICK SCHAAP, I CAN'T WAIT UNTIL TOMORROW 232 (1969). Namath demurred: "I'd have joined the Air Force or even, if I'd been real desperate, become a sportswriter." *Id.*

¹⁵ Cf. Carl Zimmer, *Lots of Animals Learn, but Smarter Isn't Better*, N.Y. TIMES, May 6, 2008, at F1 (arguing that intelligence may have harmful side effects and undue costs).

¹⁶ One anthropologist "hypothesizes that humans have adapted to an ecological niche involving the hunting and gathering of high-density, protein-rich foods," which "promoted adaptations for food sharing, thus increasing the maximum sustainable group size by decreasing the risk of starvation." Kevin A. McCabe, A

dispositions require knowledge of the environment, broadly speaking, in which they emerged. This is known as the environment of evolutionary adaptedness (EEA).¹⁷

There are other difficulties under evolutionary theory to predicting behavioral dispositions from theory alone. First among them is the effect of pleiotropy. A gene or set of genes may have more than one impact on an organism, both positive and negative.¹⁸ So long as the positive outweighs the negative, the gene(s) would be favored by natural selection, even though the effect is counterproductive with regard to a trait under consideration.¹⁹ A second difficulty is that certain evolutionary pathways may be precluded or preferred by developmental, structural, or other phenotype characteristics that happen to be selected in the past, as where the route to more durable backs and knees was greatly complicated by the fact that humans evolved from quadrupeds.²⁰ Third, evolutionary forces may operate against one another with their relative weights depending, again, on chance and circumstances. For example, insofar as individual and group selection are at work to reinforce dispositions to conform to community norms,²¹ this may come up against other, inconsistent dispositions,²² as where a person is inclined to freeride on public goods provided by others despite contrary norms.²³ In the context here, moral tendencies may be outweighed by social norms, as seems to be

Cognitive Theory of Reciprocal Exchange, in TRUST AND RECIPROCITY, *supra* note 13, at 147, 156 (references omitted).

¹⁷ See, e.g., CHRISTOPHER BADCOCK, EVOLUTIONARY PSYCHOLOGY 12 (2000); ROBERT WRIGHT, THE MORAL ANIMAL 37-39 (1994); Charles Crawford, *Environments and Adaptations: Then and Now*, in HANDBOOK OF EVOLUTIONARY PSYCHOLOGY 275 (Charles Crawford & Dennis L. Krebs eds., 1998); Symons, *supra* note 7, at 143-44.

¹⁸ See, e.g., DAVID M. BUSS, EVOLUTIONARY PSYCHOLOGY 92-93 (1999); HELENA CRONIN, THE ANT AND THE PEACOCK 60 (1991); EDWARD O. WILSON, SOCIOBIOLOGY: THE NEW SYNTHESIS 591 (1975).

¹⁹ The environment may determine whether such a trait is adaptive. "For example, the sickle-cell trait of human beings, determined by the heterozygous state of a single gene, is adaptive under living conditions in Africa, where it confers some degree of resistance to falciparum malaria," but not in America where "its bearers are no longer confronted by malaria." WILSON, *supra* note 18, at 21.

²⁰ See, e.g., S. Jay Olshansky et al., *If Humans Were Built to Last*, SCI. AM. 50 (Mar. 2001).

²¹ There is a disposition to conform to community norms. See, e.g., LEWIS PETRINOVICH, HUMAN EVOLUTION, REPRODUCTION, AND MORALITY 72 (1995); WRIGHT, *supra* note 17, at 183-84 (1994); Philip Kitcher, *Psychological Altruism, Evolutionary Origins, and Moral Rules*, 89 PHIL. STUD. 283, 305 (1998).

²² See, e.g., DANIEL C. DENNETT, FREEDOM EVOLVES 196-97 (2003).

²³ See CHARLES J. LUMSDEN & EDWARD O. WILSON, PROMETHEAN FIRE 179 (1983) ("[M]oral reasoning . . . appears to be ultimately dependent on the genes as well as on culture and self-conscious decision.").

the case in the Third Reich and Cambodia during the Pol Pot regime. Far short of these extremes, the origins of moral dispositions discussed below may point towards inconsistent predictions in even ordinary circumstances.

II. EVOLUTIONARY THEORIES OF MORALITY

A. *Kin Selection*

Kin selection is based on the proposition that one may enlarge one's contribution to the gene pool not only through one's direct descendants, but also through other genetic relatives.²⁴ This is because a person shares half her genes with her parents, siblings and children, one-quarter of her genes with her blood aunts and uncles, nieces and nephews, grandparents, and grandchildren, one-eighth of her genes with her great-grandchildren and first cousins, and so on. Therefore, she would make an equal contribution to the gene pool by producing one offspring herself or by helping her siblings produce two, her nieces produce four, or her first cousins produce eight.²⁵

But, genetically speaking, not all similarly related kin are equal. That is, some kin have better prospects of passing along their genes than do others. For example, in a developed, democratic society with Western values, if not everywhere, a woman is more likely to pass along her genes if she is attractive, charming, and nurturing, among other traits.²⁶ A man will probably be more successful if he is athletic, intelligent, and wealthy. Prospects also turn on where a person is in the ontogenetic cycle, as a young adult is likely to be more genetically productive in the future than is a person who is "of a certain age." The qualities for genetic success, direct and indirect, are many and varied, and largely contingent on the physical and social environment.

²⁴ See generally BADCOCK, *supra* note 17, at 79-93; BUSS, *supra* note 18, at 222-49; CRONIN, *supra* note 18, at 293-310; W.D. HAMILTON, *Hamilton's Rule*, in 1 NARROW ROADS OF GENE LAND 11 (1996); ROBERT TRIVERS, SOCIAL EVOLUTION 45-47, 169-202 (1985) [hereinafter TRIVERS, SOCIAL EVOLUTION].

²⁵ See LEE DUGATKIN, CHEATING MONKEYS AND CITIZEN BEES 43-44 (1999) ("Hamilton's Rule"); JOHN MAYNARD SMITH, DID DARWIN GET IT RIGHT? 187 (1989); John Maynard Smith, *The Evolution of Animal Intelligence*, in MINDS, MACHINES AND EVOLUTION 63, 64 (Christopher Hookway ed., 1984).

²⁶ The traits that attract desired matings are examined in greater detail in the section on sexual selection. See *infra* Part IV.

Let us assume that humans have the ideal cognitive abilities for advancing their genetic interests through kin selection.²⁷ Most obviously, this would include the capacity to identify the exact familial relationship to others, as where the sense of smell could pick up precise genetic signals.²⁸ It would also include the highly refined ability to calculate, or intuit,²⁹ genetic payoffs for investing in one's kin and oneself. For example, assume a young person is facing the prospects of producing his own children or sacrificing this opportunity in order to advance that of a sister. Many types of tradeoffs would go into his evolutionary payoff calculus. He would have to incorporate, consciously or otherwise, the following kinds of likelihoods: that he and his sister would find mates or matings;³⁰ the genetic fitness of these matches;³¹ the number of their offspring; the relative future wherewithal of him and his sister, and their partners, families and supporters, to raise accomplished children; the success of these children to further reproduce; etc.³² These estimates turn on many factors, such as

²⁷ As noted by Hauser, HAUSER, *supra* note 5, at 251-52, even before evolutionary psychology took off with the publication of Edward O. Wilson's seminal tract, *SOCIOBIOLOGY: THE NEW SYNTHESIS* (1975), Rawls worried that kin selection would threaten "the principles of justice" either by limiting the capacity for moral behavior to kin or driving out more universal dispositions, JOHN RAWLS, *A THEORY OF JUSTICE* 503-04 (1971).

²⁸ There is evidence that human mothers have the ability to identify their newborns by smell, and vice versa. See Natalie Angier, *Powerhouse Of Senses, Smell, at Last Gets Its Due*, N.Y. TIMES, Feb. 14, 1995, at C1. Some animals identify kin by odor. See MICHAEL S. GAZZANIGA, *HUMAN* 310 (2008). Even some plants can recognize kin. See Carol K. Yoon, *Loyal to Its Roots*, N.Y. TIMES, June 10, 2008, at F1 ("If the sea rocket detects unrelated plants growing in the ground with it, the plant aggressively sprouts nutrient-grabbing roots. But if it detects family, it politely restrains itself.")

²⁹ Recall that kin selection applies to all organisms. Therefore, this principle can operate at a fully intuitive, or even purely biochemical level, without the need for considered calculation, as in the case of plants.

³⁰ "Mates" refers to pair-bonded partners, while "matings" refers to reproduction with others.

³¹ What is meant by genetic desirability is taken up in the section on sexual selection. See *infra* Part IV.

³² In the context of reciprocal altruism, it has been noted that "[s]eparate [cognitive] subsystems must exist that are capable of calculating costs and benefits of various outcomes and actions for the self; similarly, systems must exist that can calculate the costs and benefits of various actions to other individuals as well." Kurzban, *supra* note 13, at 117. In general, to increase fitness in social environments, "cognitive adaptations are hypothesized to exist to reason about others' behavior," including systems that monitor others' actions, estimate their effects on inclusive fitness, and motivate beneficial responses. Debra Lieberman, *Moral Sentiments Relating to Incest: Discerning Adaptations from By-Products*, in 1 *MORAL PSYCHOLOGY* 165, 167 (Walter Sinnott-Armstrong ed., 2008). But, Lieberman cautions, "some moral sentiments relating to third-party behavior may be *by-products* of psychological adaptations." *Id.* at 169.

the youth, attractiveness, accomplishments, vivacity, and motherliness of his sister, and his own abilities, commitment, personality, and financial expectations. The number of relevant factors is daunting, and the contingent ones must be discounted by their probability. But in the ideal, kin-selected world we temporarily inhabit, this is not a problem.

Now let us identify the types of normative impulses or deductions that would be expected in this ideal, entirely kin-selected world.³³ First, assume that our young person concludes that he himself has better prospects than his sister of enriching the gene pool. This might be the evolutionary maxim that would emerge: “do nothing for your sister that has any cost to you.” Or, if he finds that he can induce his sister and others to advance his own genetic interests, it might be: “invest in your sister to the extent that it induces her and others to invest even more in you and your descendants.” This Machiavellian maxim would be generalized to include all relatives, and even all other persons. It seems psychopathic, immoral, dystopian.³⁴ On the other hand, if our young man concludes that his sister has more than double the prospects of enriching the gene pool than he does, this may be the maxim he embraces: “sacrifice yourself for your sister and her descendants to the point where further sacrifice does not contribute to their genetic prospects.”³⁵ Or, “to the point where further sacrifice would contribute less than

³³ “There is a profound sense in which charity begins at home. . . . Is this then a ‘moral’ commitment or not? . . . For apart from not being grounded in regard for others, such a commitment may be precisely like the typical moral commitment in its cogency, its form and its action-guiding relevance.” W.D. Falk, *Morality, Self, and Others*, in MORALITY AND SELF-INTEREST, *supra* note 12, at 225, 240. For discussion of various “evolutionary behavioral maxims” and the morality behind them, see Bailey Kuklin, *The Morality of Evolutionarily Self-Interested Rescues*, 40 ARIZ. ST. L.J. 453, 469-73 (2008).

³⁴ For a role for self-interest in moral thinking, see, for example, Paul Bloomfield, *Introduction*, in MORALITY AND SELF-INTEREST, *supra* note 12, at 3. “Once we have a proper understanding of morality and of the nature of individual interests, we will see that morality and self-interest can never in fact conflict.” Samuel Scheffler, *Potential Congruence*, in MORALITY AND SELF-INTEREST, *supra* note 12, at 117, 117. Rationality may have made the difference. Joyce speculates that “if our ancestors had never evolved the sophisticated rational abilities that humans at present enjoy, we would never have gotten beyond liking actions that help ourselves and our kin and disliking actions that harm them, in which case perhaps we would never have started making moral judgments at all.” Richard Joyce, *What Neuroscience Can (and Cannot) Contribute to Metaethics*, in 3 MORAL PSYCHOLOGY, *supra* note 4, at 371, 390. Yet genetically self-interested maxims may find some support in the interstices of standard moral theory. See Kuklin, *supra* note 33, at 454-58. *But see* Joyce, *Response*, *supra* note 12; Schmitz, *supra* note 12.

³⁵ This sounds like the stereotypical plaint of mothers everywhere. You may insert your own ethnic jokes here.

using your resources for offspring of your own or those of another relative." Acting on this maxim may well drive our young man down the slope of martyrdom. Instead of being the devil above, he has become a saint.³⁶ Well, not quite a perfect saint, for he is acting in his own genetic self-interest.³⁷ Of course, the world he comprehends so well will be much more complicated than these bare examples suggest. These supposed calculations have been expressed with an unrealistic certainty. For example, his sister may have better prospects than he does, but this is likely to be probabilistic only, requiring him to calculate the odds of each of the relevant contingencies relating to the enrichment of the gene pool with his genes. This would require the computation of a very complex portfolio of "genetic investments" that include this sister and all his other kin in proportion to their relatedness and prospects, and even non-kin insofar as they will reciprocate to kin with interest.³⁸ The selfish gene, fully refined, requires a supercomputer for calculations, to say nothing of an enormous data input.³⁹

Returning to the real world, we find, first of all, that these types of difficult calculations are beyond the abilities of humans. In recent decades, behavioral economics and cognitive psychology, among other disciplines, have made it clear that humans are oftentimes crude reckoners. We are faulty at perceiving data, weak at using the data to arrive at logical conclusions, and even shaky at appreciating our own preferences.⁴⁰ In the face of risk and uncertainty we may be relegated to guesstimates and heuristics.⁴¹ Now I do not wish to

³⁶ That saintliness is something we admire, but are unlikely to seek. See MICHAEL RUSE, *TAKING DARWIN SERIOUSLY* 244 (2d ed. 1998); John L. Mackie, *The Law of the Jungle: Moral Alternatives and Principles of Evolution*, in *PHILOSOPHY OF BIOLOGY* 303, 312 (Michael Ruse ed., 1998).

³⁷ The altruism of religious saints driven by rewards promised in the afterlife may also be challenged. See JANET R. RICHARDS, *HUMAN NATURE AFTER DARWIN* 156 (2000).

³⁸ By considering non-kin, the calculation suggests reciprocal altruism, the next topic, rather than simply kin selection.

³⁹ For a discussion of these kinds of calculations, see JEROME H. BARKOW, *DARWIN, SEX, AND STATUS* 48-53 (1989).

⁴⁰ See generally *ADVANCES IN BEHAVIORAL ECONOMICS* (Colin F. Camerer et al. eds., 2003); *CHOICES, VALUES, AND FRAMES* (Daniel Kahneman & Amos Tversky eds., 2000); *HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT* (Thomas Gilovich et al. eds., 2002); *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES* (Daniel Kahneman et al. eds., 1982); *THE LAW AND ECONOMICS OF IRRATIONAL BEHAVIOR* (Francesco Parisi & Vernon L. Smith eds., 2005).

⁴¹ See generally GERD GIGERENZER, *ADAPTIVE THINKING: RATIONALITY IN THE REAL WORLD* (2000); GIGERENZER ET AL., *SIMPLE HEURISTICS THAT MAKE US SMART*

unduly downplay our rationality. We have demonstrated enough aptitude to get us off the savanna and onto the moon, though, perhaps, not enough to keep us prospering much longer. But in considering the impulses, moral and otherwise, that have been selected over millions of years in furtherance of our struggles for survival and reproduction, it is apparent that they have had to accommodate our coarse perceptions and fallible computations.

The real world also makes clear that humans are not capable of identifying kin with exactitude.⁴² Instead, biologists have found indirect mechanisms for identifying kinship relationships, including location, familiarity, phenotype matching, and recognition alleles.⁴³ These recognition clues are based on the observation that, for humans, especially in prehistoric times, two people are more likely to be related to one another if they are raised together in the same den or household, or even in the same group or vicinity.⁴⁴ Furthermore, similar physical characteristics imply a likely relationship,⁴⁵ as do particularly unusual traits shared in common.⁴⁶

(1999); BOUNDED RATIONALITY: THE ADAPTIVE TOOLBOX (Gerd Gigerenzer & Reinhard Selten eds., 2002).

⁴² Of course, women can perfectly well identify their children. Hence, grandmothers and their female ancestors can be certain that their daughters' lineal descendants are theirs. As far as the men in the house, well, it's "mother's baby, father's maybe." Nicholas Wade, *Birds Do It. Bees Do It. Some People Do, Too*, N.Y. TIMES, May 20, 2001, § 4 (Week in Review), at 5 ("And next time you look over a cradle, into those innocent eyes and half-formed smile, remember the old saying, 'Mother's baby, father's maybe.' and resolve to have a serious talk one day with your own mother, when you are a little older.").

⁴³ See CARTWRIGHT, *supra* note 7, at 80-82 (location, familiarity, phenotype matching, and recognition alleles and "green beards"); DAWKINS, *supra* note 10, at 89-90 ("Green Beard Altruism Effect"); R. PAUL SHAW & YUWA WONG, GENETIC SEEDS OF WARFARE 39 (1989) (spatial proximity, early experience, and phenotypic matching); Charles Crawford, *Psychology*, in THE SOCIOBIOLOGICAL IMAGINATION, *supra* note 7, at 303, 310-11 (spatial distribution, association, phenotype matching, and recognition alleles).

"In general, evolution is hypothesized to have taken advantage of statistically recurring patterns to fashion kin-detection mechanisms." Lieberman, *supra* note 32, at 174.

⁴⁴ See, e.g., CARTWRIGHT, *supra* note 7, at 80 ("location" and "familiarity").

⁴⁵ See C.R. BADCOCK, THE PROBLEM OF ALTRUISM 75 (1986); CARTWRIGHT, *supra* note 7, at 80-81; HAMILTON, *Selection of Selfish and Altruistic Behaviour in Some Extreme Models*, in 1 NARROW ROADS OF GENE LAND, *supra* note 24, at 198, 211.

⁴⁶ Dawkins observed that if a gene or genes that produced a particular effect, say, altruism, also produced a recognizable feature ("green beard"), then this common feature would identify those who are likely to be related and hence share the altruistic gene(s). See DAWKINS, *supra* note 10, at 89-90.

Taking these four kinship identification mechanisms in turn, various kin selection maxims may ensue. From location and familiarity clues, one would be disposed to act in other persons' reproductive interest (and indirectly, one's own) to the extent they were raised in the same household or vicinity, or are known to oneself. Similarly, from phenotype matching and recognition allele clues, one would favor others to the extent that they looked like oneself or had a particular feature in common. A broad range of morally questionable dispositions (biases) would align with these kin identification mechanisms, including territoriality, ethnocentricity, racism, tribalism, nationalism, and xenophobia.⁴⁷

But the genetic usefulness of any impulses that arise from kin recognition clues depends on the circumstances in which they evolved. For example, assume that during the critical evolutionary period (EEA) humans lived in isolated clans in which linear families stayed together in their own compounds and outbreeding was minimal.⁴⁸ In this situation, kin selection dispositions following location and familiarity clues would be quite accurate. On the other hand, this would not be the case if in the EEA there were many diverse tribes living closely together that freely outbred. Perhaps, in order to reduce potential conflicts, neighbors would raise one or more of each other's children in their own compounds, or neighboring tribes might exchange child raising responsibilities. Or, family clans might frequently splinter with groups moving freely from tribe to tribe. In these types of conditions, location and familiarity clues would be much less reliable.

⁴⁷ See, e.g., DEL THIESSEN, BITTERSWEET DESTINY: THE STORMY EVOLUTION OF HUMAN BEHAVIOR 296 (1996) ("nepotism, ethnocentrism, tribalism, social bonding, obedience to authority, nationalism, patriotism, territorially [sic], enemy thinking, xenophobia, jingoism, and reciprocal social exchange"); E.O. Wilson, *Comparative Social Theory*, in 1 THE TANNER LECTURES ON HUMAN VALUES 49, 68 (Sterling M. McMurrin ed., 1980) ("ethnocentricity, xenophobia, territoriality").

⁴⁸ See Randolph M. Nesse, *Natural Selection and the Capacity for Subjective Commitment*, in EVOLUTION AND THE CAPACITY FOR COMMITMENT 1, 32 (Randolph M. Nesse ed., 2001) ("As many have pointed out, we evolved in small kin groups where helping others often helps the actor's genes."); Yuwa Hedrick-Wong, *The Global Environmental Crisis and State Behavior: An Evolutionary Perspective*, in HANDBOOK OF EVOLUTIONARY PSYCHOLOGY, *supra* note 17, at 573, 578 ("[E]arly human groups . . . were actually extended families."). Posner speculates that because the moral sense evolved when humans lived in small groups, there was no need to confront moral duties towards strangers and hence no evolutionary pressure to develop a capacity for moral reasoning. See RICHARD A. POSNER, THE PROBLEMATICS OF MORAL AND LEGAL THEORY 33-35 (1999); Richard A. Posner, *The Problematics of Moral and Legal Theory*, 111 HARV. L. REV. 1637, 1661-62 (1998).

Dispositions stemming from phenotype matching and recognition alleles may be subject to fewer twists than those from location and familiarity clues because these kinship clues are more direct. Yet even here we can imagine significant variations in the likelihood that these indicators would emerge, or their strength if they did. For an extreme example, assume that a small clan squeezed through an evolutionary bottleneck during the EEA.⁴⁹ Say this clan moved across an ice-age bridge to a new island, struggling there as a small group for many generations until they ultimately became the sole ancestors of all humans. If everyone in this clan looked quite similar, the usefulness of phenotype matching and recognition alleles would be reduced or, at least, would be more unlikely to evolve because of the fine-grained cognitive ability required to be of much use in making fit distinctions. Indeed, even if they did not look alike, kin identification clues, including ones related to location and familiarity, would still be less evolutionarily useful because everyone is related and, for lack of outbreeding opportunities, complexly and multiply interrelated. Thus, a sufficiently useful, though crude, disposition aligning with kin selection may simply be, “help everyone.” Here, whatever dispositions from kin recognition clues that had previously evolved may well dissipate, just as sighted fish species that find niches in sunless caves eventually lose their ability to see.⁵⁰ Once the population expands in number and location to the point where kin relationships become more diverse, the genetic advantages to kin recognition would reemerge, but, in the meantime, moralists may be happy that the dubious biases of territoriality, xenophobia, etc., had atrophied as evolutionarily superfluous.

The EEA of human evolution doubtlessly was much more complicated than the extreme circumstances discussed above. Since evolution is such a slow process, the physical and social environment in which human ancestors evolved surely varied over time and place. While there was a common female ancestor for humans some 200,000 years ago, Mitochondrial

⁴⁹ “[I]f we find a somewhat aberrant population in a species, it is almost invariably a far-distant peripheral isolate. This process of speciation evolution has also been referred to as ‘bottleneck evolution.’ It may also occur in temporarily highly isolated and in relict populations.” ERNST MAYR, *WHAT EVOLUTION IS* 194 (2001).

⁵⁰ See, e.g., Henry Fountain, *The Cavefish’s Lost Sight*, N.Y. TIMES, Oct. 19, 2004, at F3.

Eve,⁵¹ and the period since then is so short as to restrict the likely subsequent behavioral variations,⁵² we do not know very well what Eve's EEA was like, and we cannot discount subsequent divergence altogether as evident from the diversity of physical traits among modern humans. Prediction of the actual range of behavioral dispositions of modern humans stemming from kin selection is not a question of evolutionary principle alone. Chance, circumstances and environmental changes are critical.⁵³ As is the case with all evolutionary sources of moral impulses, their actual consequence is an empirical question. Yet it seems likely that kin selection would lead towards a somewhat narrow focus for moral concerns.

B. *Reciprocal Altruism*

Helping unrelated persons may also be genetically advantageous. For example, if a farmer with a bumper crop aids an unrelated neighbor whose crop failed, this would work to the farmer's genetic benefit if the neighbor aided her when the tables were turned. The assistance may even be indirect, as where the aided neighbor pulls a third person from a burning structure who, in turn, saves the original farmer's son from drowning.⁵⁴ This is the reasoning behind the principle of reciprocal altruism.⁵⁵

⁵¹ See DAWKINS, *supra* note 11, at 44-57 (50,000-250,000 years ago); RICHARD DAWKINS, *THE ANCESTOR'S TALE* 54-55 (2004) (140,000 years ago for Eve, 60,000 years ago for "Y-chromosome Adam"); DANIEL C. DENNETT, *DARWIN'S DANGEROUS IDEA* 96-100 (1995); Gary Stix, *Traces of a Distant Past*, *SCI. AM.*, July 2008, at 56, 58 (200,000 years); Nicholas Wade, *DNA Study Yields Clues on First Migration of Early Humans*, *N.Y. TIMES*, May 13, 2005, at A8 (200,000 years).

⁵² See GEORGE C. WILLIAMS, *NATURAL SELECTION* 53-54, 64, 128-42 (1992). Occasionally intense selection pressures can affect heritable traits more rapidly. See, e.g., JAMES L. GOULD & CAROL G. GOULD, *SEXUAL SELECTION* 254 (2d ed. 1997) ("500 generations"); HAUSER, *supra* note 5, at 349-51.

⁵³ See, e.g., LOW, *supra* note 11, at 31-33 ("Novel Evolutionary Environments: Can the Principles Still Hold?").

⁵⁴ See RICHARD D. ALEXANDER, *THE BIOLOGY OF MORAL SYSTEMS* 84 (1987) ("indirect (socially mediated) nepotism"); BADCOCK, *supra* note 17, at 105-06; LOW, *supra* note 11, at 152; Dennis L. Krebs, *The Evolution of Moral Behaviors*, in *HANDBOOK OF EVOLUTIONARY PSYCHOLOGY*, *supra* note 17, at 337, 345-46; Robert L. Trivers, *The Evolution of Reciprocal Altruism*, 46 *Q. REV. BIOLOGY* 35, 39 (1971) [hereinafter Trivers, *Reciprocal Altruism*].

⁵⁵ "For both chimpanzees and other animals, the theory of *reciprocal altruism*, one pillar of the evolutionary approach to cooperative behavior, is not nearly as well supported as the theory of kin selection, the other pillar." Frans B.M. de Waal, *The Chimpanzee's Service Economy: Evidence for Cognition-Based Reciprocal Exchange*, in *TRUST AND RECIPROCITY* 128, 130 (Elinor Ostrom & James Walker eds., 2003) (references omitted). "[O]nly for chimpanzees is there evidence for the entire set

Reciprocal altruism has three requisites. First, there must be a cost to providing the benefit. In the example above, if the farmer's bumper crop would have spoiled anyway, the farmer sacrificed nothing by giving some or all of the excess to the neighbor. Second, there must be a delay between the provision of the benefit and the advantageous return. If the acts occur simultaneously, as where there is a straight trade of apples for oranges, there is no need for either party to trust the other for later aid. Third, the provided benefit must be dependent on the later reciprocation. Otherwise, though the initial benefit is altruistic, it does not raise the cooperative, trust difficulties of reciprocal altruism.⁵⁶

The difficulties facing reciprocal altruism are very substantial. Unless the original helper can depend on the beneficiary to reciprocate, dispositions toward lending aid will be driven out by freeriders or cheaters who benefit without responding in kind. Robert Trivers, who wrote the seminal

of features expected if reciprocity is cognition based: partner specificity, selective protest, retaliation, turn taking, and the effect of one service on another." *Id.* at 140. See generally BADCOCK, *supra* note 45, at 37-47; BUSS, *supra* note 8, at 253-77; CRONIN, *supra* note 18, at 253-65; TRIVERS, SOCIAL EVOLUTION, *supra* note 24, at 47-49, 361-94; Sarah F. Brosnan & Frans B.M. de Waal, *A Proximate Perspective on Reciprocal Altruism*, 13 HUM. NATURE 129 (2002); Trivers, *Reciprocal Altruism*, *supra* note 54. Buss identifies the terms cooperation, reciprocation, and social exchange as "approximate synonyms for reciprocal altruism." BUSS, *supra* note 7, at 254. That the evidence for reciprocal altruism among other animals is weak, see GEOFFREY F. MILLER, THE MATING MIND 301 (2000) [hereinafter MILLER, THE MATING MIND], Brosnan, *supra*, at 132, and Peter Hammerstein, *Why Is Reciprocity So Rare in Social Animals? A Protestant Appeal*, in GENETIC AND CULTURAL EVOLUTION OF COOPERATION 83 (Peter Hammerstein ed., 2003) (with explanations). But there is much evidence that humans are strong reciprocators. See, e.g., Herbert Gintis, *Group Selection and Human Prosociality*, in EVOLUTIONARY ORIGINS OF MORALITY 215, 217 (Leonard D. Katz ed., 2000); Robert M. Sapolsky, *Cheaters and Chumps*, 111 NAT. HIST. 20, 22 (June 2002).

⁵⁶ See, e.g., FRANS DE WAAL, GOOD NATURED 24 (1996); HAUSER, *supra* note 5, at 254. One commentator identifies four minimum requirements:

1. The environment must be one in which there are benefits to be conferred.
2. Organisms must have repeated interactions with one another.
3. Organisms must have sufficient information-processing abilities that they are able to distinguish among individuals and remember which ones have and have not delivered benefits in the past.
4. Organisms must have sufficient information-processing sophistication and behavioral flexibility that they can interact with other organisms contingent on the history of interaction.

Kurzban, *supra* note 13, at 111 (references omitted). These requirements were probably met in the EEA. See *id.* at 115-17. In general, reciprocal altruistic behavior "is linked to (1) a preference for altruistic partners; (2) a tendency to form long-lasting partnerships with other altruists; (3) differential generosity; (4) normative guidance and monitoring of compliance; and (5) moralistic aggression or punishment of defectors." Alejandro Rosas, *Multilevel Selection and Human Altruism*, 23 BIOLOGY & PHIL. 205, 209 (2008).

article on reciprocal altruism,⁵⁷ identifies two forms of cheating: gross cheating, where “the cheater fails to reciprocate at all and the altruist suffers the cost of whatever altruism has been dispensed without compensating benefits;”⁵⁸ and subtle cheating, which “involves reciprocating but always attempting to give less than one was given, or more precisely, to give less than the partner would give if the situation were reversed.”⁵⁹ Reliable trust, then, is at the center of this cooperative understanding.⁶⁰ As suggested by the prisoner’s dilemma,⁶¹ trust requires refined cognitive abilities and mechanisms to restrict cheating.⁶²

⁵⁷ See Trivers, *Reciprocal Altruism*, *supra* note 54, at 35.

⁵⁸ TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 387.

⁵⁹ *Id.*

⁶⁰ “[N]atural selection will rapidly favor a complex psychological system in each individual regulating both his own altruistic and cheating tendencies and his responses to these tendencies in others.” Trivers, *Reciprocal Altruism*, *supra* note 54, at 48.

⁶¹ Trivers noticed the relationship between the prisoner’s dilemma and reciprocal altruism. See TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 390. See generally WILLIAM POUNDSTONE, *PRISONER’S DILEMMA* (1992). For a comparison of the prisoner’s dilemma to reciprocal altruism, see Leda Cosmides & John Tooby, *Cognitive Adaptations for Social Exchange*, in *THE ADAPTED MIND*, *supra* note 7, at 163, 170-79 (Jerome H. Barkow et al. eds., 1992).

⁶² See ALEXANDER, *supra* note 54, at 95 (“Systems of indirect reciprocity as expressed in humans require memory, consistency across time, the application of precedents, and persistent and widely communicated concepts of right and wrong.”); BUSS, *supra* note 8, at 264 (“Humans must be able to recognize other individuals; remember the history of interactions with them; communicate values, desires, and needs to others; recognize them in others; and represent the costs and benefits of a variety of items of exchange.”); Henk de Vos & Evelien Zeggelink, *Reciprocal Altruism in Human Social Evolution: The Viability of Reciprocal Altruism with a Preference for “Old-Helping-Partners”*, 18 *EVOLUTION & HUM. BEHAV.* 261, 262-63 (1997). See generally Cosmides, *supra* note 61. The cognitive abilities required for reciprocal altruism may not be that great. Axelrod opines that even bacteria can meet them. See ROBERT AXELROD, *THE EVOLUTION OF COOPERATION* 174 (1984).

For the biochemistry behind trust, see Paul J. Zak, *The Neurobiology of Trust*, *SCI. AM.*, June 2008, at 88. While “[t]here is abundant evidence that humans are adept at recognizing and remembering other humans,” Kurzban, *supra* note 13, at 116, the special ability of humans to remember cheaters is not settled. Some studies have found enhanced memory of cheaters. See, e.g., Dan Chiappe, *Cheaters Are Looked at Longer and Remembered Better than Cooperators in Social Exchange Situations*, 2 *EVOLUTIONARY PSYCHOL.* 108 (2004); Linda Mealey et al., *Enhanced Memory for Faces Associated with Potential Threat*, 17 *ETHOLOGY & SOCIOBIOLOGY* 119 (1996). Others have not. See, e.g., Pat Barclay, *Do People Differentially Remember Cheaters?*, 17 *HUM. NATURE* 98 (2006); Bettina Mehl & Axel Buchner, *No Enhanced Memory for Faces of Cheaters*, 29 *EVOLUTION & HUM. BEHAV.* 35 (2008). For evidence that humans can “identify people who are emotionally predisposed to cooperate,” see Robert H. Frank, *Cooperation Through Emotional Commitment*, in *EVOLUTION AND THE CAPACITY FOR COMMITMENT*, *supra* note 48, at 57, 63, or can distinguish altruists from egoists, see Julia Pradel et al., *Spotting Altruistic Dictator Game Players and Mingling with Them: The Elective Assortation of Classmates*, 30 *EVOLUTION & HUM. BEHAV.* 103 (2009).

Various mechanisms increase the trust and trustworthiness needed to facilitate reciprocal altruism.⁶³ Among social animals, norms provide one of them.⁶⁴ There is evidence of a genetic disposition to acquire moral norms.⁶⁵ Another mechanism is emotion.⁶⁶ Emotions, arguably, are mental states selected to advance evolutionary interests.⁶⁷ Among the emotions that affect the likelihood of later reciprocation are gratitude, sympathy, love, liking, guilt, and shame.⁶⁸ Even less savory emotions such as anger, spite,

⁶³ An important mechanism may be “a process of creating conditions that make us more likely to elicit cooperative tendencies in one another.” ROBERT H. FRANK, *WHAT PRICE THE MORAL HIGH GROUND?* 13 (2004). Positive impressions of others arise from reputation, attractiveness, “the character of your initial exchange,” and being alike “in some way—say in dress, speech patterns, or ethnic background.” *Id.* at 15. Some of these positive impressions may have origins in kin selection. *See supra* notes 24-25 and accompanying text.

⁶⁴ *See, e.g.*, JON ELSTER, *NUTS AND BOLTS FOR THE SOCIAL SCIENCES* 113-23 (1989); ROBERT NOZICK, *INVARIANCES* 251 (2001); JOHN MAYNARD SMITH, *THE THEORY OF EVOLUTION* 199 (3d ed. 1975); Trivers, *Reciprocal Altruism*, *supra* note 54. *See generally* ERIC A. POSNER, *LAW AND SOCIAL NORMS* (2000). But, arguably, though “community views are an essential consideration and ought to be an influential factor in the policy-making and code-drafting process [regarding criminal liability and punishment, nevertheless,] . . . such views ought not be taken as determinative.” PAUL H. ROBINSON & JOHN M. DARLEY, *JUSTICE, LIABILITY, AND BLAME: COMMUNITY VIEWS AND THE CRIMINAL LAW* 4 (1995).

⁶⁵ After mustering evidence, Hauser concludes:

We are endowed with a moral acquisition device. Infants are born with the building blocks for making sense of the causes and consequences of actions, and these early capacities grow and interface with others to generate moral judgments. Infants are also equipped with a suite of unconscious, automatic emotions that can reinforce the expression of some actions while blocking others. Together, these capacities enable children to build moral systems. Which system they build depends upon their local culture and how it sets the parameters that are part of the moral faculty.

HAUSER, *supra* note 5, at 303.

⁶⁶ *See, e.g.*, ELSTER, *supra* note 64, at 113; Robert H. Frank, *Economics, in THE SOCIOBIOLOGICAL IMAGINATION*, *supra* note 7, at 91, 96-102.

⁶⁷ *See, e.g.*, VICTOR S. JOHNSTON, *WHY WE FEEL* 86 (1999); STEVEN PINKER, *HOW THE MIND WORKS* 370 (1997); John Tooby & Leda Cosmides, *The Psychological Foundations of Culture*, in *THE ADAPTED MIND*, *supra* note 7, at 19, 99.

⁶⁸ *See, e.g.*, BADCOCK, *supra* note 17, at 102-05; ANTONIO R. DAMASIO, *DESCARTES' ERROR* 175-77 (1994); JOHNSTON, *supra* note 67, at 83-85; PINKER, *supra* note 67, at 404; TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 388-89; Robert H. Frank, *Regulating Sexual Behavior: Richard Posner's Sex and Reason*, in *LAW AND EVOLUTIONARY BIOLOGY* 149, 156 (Lawrence A. Frolik ed., 1999) [hereinafter Frank, *Regulating Sexual Behavior*]; Trivers, *Reciprocal Altruism*, *supra* note 54, at 47-54. *See generally* Daniel M.T. Fessler & Kevin J. Haley, *The Strategy of Affect: Emotions in Human Cooperation*, in *GENETIC AND CULTURAL EVOLUTION OF COOPERATION*, *supra* note 55, at 7.

Having moral sentiments that are apparent to others is a signal of trustworthiness. *See* ROBERT H. FRANK, *PASSIONS WITHIN REASON* 64-65, 96-113 (1988). Emotions such as guilt and shame may serve as motivation for the cheater to

contempt, or moralistic aggression will help by deterring cheaters and passive bystanders.⁶⁹ An innate sense of justice or fairness may induce deterrent responses.⁷⁰ Because at least some of these emotions are moral in nature,⁷¹ some

behave cooperatively: "There is plenty of empirical evidence that self-directed moral emotions have motivational efficacy." Richard Joyce, *Morality, Schmorality, in MORALITY AND SELF-INTEREST*, *supra* note 12, at 51, 73 (with references) [hereinafter Joyce, *Morality, Schmorality*]; *see, e.g.*, BADCOCK, *supra* note 17, at 104; BADCOCK, *supra* note 45, at 40; RICHARD JOYCE, *THE EVOLUTION OF MORALITY* 111 (2006); PINKER, *supra* note 67, at 404; TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 389; Trivers, *Reciprocal Altruism*, *supra* note 54, at 49-51.

⁶⁹ "[S]pite, or the desire to punish (or at least avoid) those who defect or fail to cooperate, is a critical auxiliary system for trust." Kurzban, *supra* note 13, at 118. "Evidence from a large number of experiments indicates that subjects are willing to endure a cost to punish an anonymous other with whom they know they will not subsequently interact if that individual is perceived to have violated an implicit social contract or norm." *Id.* at 119. "Many evolutionary approaches to the establishment of cooperation in groups have emphasized the punishing of noncontributing group members as a relatively cheap way to induce cooperation." *Id.* at 120. *See Robert Boyd & Peter J. Richerson, The Evolution of Altruistic Punishment, in THE ORIGIN AND EVOLUTION OF CULTURES* 241 (2005). For the value of various negative emotions to promote reciprocal altruism, *see, for example*, ROBERT AXELROD, *THE COMPLEXITY OF COOPERATION* 55 (1997), BADCOCK, *supra* note 17, at 39, JOHNSTON, *supra* note 67, at 84, PINKER, *supra* note 67, at 404, Robert Boyd & Peter J. Richerson, *Punishment Allows the Evolution of Cooperation (or Anything Else) in Sizable Groups*, 13 *ETHOLOGY & SOCIOBIOLOGY* 171 (1992), Lee A. Dugatkin, *Cooperation in Animals: An Evolutionary Overview*, 17 *BIOLOGY & PHIL.* 459, 472 (2002), Michael E. Price et al., *Punitive Sentiment As an Anti-Free Rider Psychological Device*, 23 *EVOLUTION & HUM. BEHAV.* 203 (2002), and Trivers, *Reciprocal Altruism*, *supra* note 54, at 49.

⁷⁰ *See* TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 388-89. "This sense of justice involves two components: individuals share a common standard or sense of fairness, and infractions of this standard are associated with strong emotional reactions and aggressive impulses." *Id.* at 389. *See* Trivers, *Reciprocal Altruism*, *supra* note 54, at 49 ("Injustice, unfairness, and lack of reciprocity often motivate human aggression and indignation."). *See generally* THE SENSE OF JUSTICE: BIOLOGICAL FOUNDATIONS OF THE LAW (Roger D. Masters & Margaret Gruter eds., 1992).

⁷¹ "Moral emotions differ from basic emotions, such as fear and happiness, in that they are often linked to the interest or welfare either of society as a whole or at least of persons other than the agent." Moll, *supra* note 4, at 2. "[T]hey typically include (but are not restricted to) guilt, pity, embarrassment, shame, pride, awe, contempt, indignation, 'moral' disgust, and gratitude." *Id.*

Haidt proposes a general scheme in which we classify our emotional reactions as moral to the degree that (1) they have "disinterested elicitors"; i.e., they are provoked by events touching concerns that reach beyond our narrow self-interest and (2) they have disinterested "action tendencies" (Haidt calls these "prosocial"); i.e., they prime us (motivationally and cognitively) to act in ways that benefit others or that uphold or benefit structures that we value, such as the "social order."

Victoria McGreer, *Varieties of Moral Agency: Lessons from Autism (and Psychopathy)*, in 3 *MORAL PSYCHOLOGY*, *supra* note 4, at 227, 249 (citing Jonathan Haidt, *The Moral Emotions*, in *HANDBOOK OF AFFECTIVE SCIENCES* 852 (Richard J. Davidson et al. eds., 2003)). "Thus, we have other-condemning emotions such as anger, contempt, and disgust; self-condemning emotions such as shame, embarrassment, and guilt; other-praising emotions such as admiration, humility, and respect; and finally self-praising emotions such as pride and self-respect." *Id.* at 252.

commentators speculate that reciprocal altruism is the primary source of the human sense of morality.⁷² But it must be stressed, often if judged by the number of naïve critics, that any morals or moral-like emotions that emerge from natural selection must confront Hume's is-ought chasm. Just because it is the case that these impulses were selected, it does not follow that they are morally proper.⁷³ For that matter, they may not even be evolutionarily advantageous in today's world. For example, the spite that may have been useful in deterring cheating in a face-to-face, closed society in the EEA, seems counterproductive when played out as road rage on the Long Island Expressway.⁷⁴

As with kin selection, cognitive abilities are crucial to the effectiveness of reciprocal altruism. For example, as Hauser put it, "[t]hese include, most important, the capacity to quantify the costs and benefits of an exchange, compute the contingencies, inhibit the temptation to defect, and punish those who fail to play fair."⁷⁵ To emphasize another cognitive difficulty, if sympathy or the propensity to feel guilt or shame increases the likelihood of reciprocation, then the ability to

⁷² See, e.g., ALEXANDER, *supra* note 54, at 77; Joyce, *Morality, Schmorality*, *supra* note 68, at 140-41; HOWARD KAHANE, *CONTRACT ETHICS* 18 (1995); MATT RIDLEY, *THE ORIGINS OF VIRTUE* 151-54 (1996); Michael Ruse & Edward O. Wilson, *The Evolution of Ethics*, in *PHILOSOPHY OF BIOLOGY*, *supra* note 36, at 313, 316; Michael Shermer, *The Pinker Instinct*, 9(1) *SKEPTIC* 88, 92 (2001) (interview of Steven Pinker). Recall that others place kin selection as the source of moral feelings. See *supra* notes 35-37 and accompanying text.

⁷³ See DAVID HUME, *A TREATISE OF HUMAN NATURE* 469-70 (L.A. Selby-Bigge ed., 1888) (1739 & 1740). "The systems that generate intuitive moral judgments are often in conflict with the systems that generate principled reasons for our actions, because the landscape of today only dimly resembles our original state." HAUSER, *supra* note 5, at 418; see also NOZICK, *supra* note 64, at 237-38 (perhaps moral intuitions are irrelevant).

⁷⁴ See Janet R. Richards, *The Darwin Wars and the Human Self-Image*, in *A COMPANION TO GENETHICS* 271, 280 (Justine Burley & John Harris eds., 2002). "To the extent that modern environments differ from ancestral environments, the impact of the operation of particular cognitive systems on reproductive success cannot be predicted." Kurzban, *supra* note 13, at 119. More generally, "moral intuitions often bring about nonoptimal or even disastrous consequences in matters of public policy, public health, and the tort system." Jonathan Haidt, *The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment*, 108 *PSYCHOL. REV.* 814, 815 (2001), quoted in Gerd Gigerenzer, *Moral Intuition = Fast and Frugal Heuristics?*, in 2 *MORAL PSYCHOLOGY* 1, 18 (Walter Sinnott-Armstrong ed., 2008).

⁷⁵ HAUSER, *supra* note 5, at 254. Hauser advances these cognitive hurdles as reasons why so few examples of reciprocal altruism have been found in the animal kingdom. See *id.* at 254-55. For indirect reciprocity, additional cognitive skills are required. "Indirect reciprocity involves reputation and status, and results in everyone is a social group continually being assessed and reassessed by interactants, past and potential, on the basis of their interactions with others." ALEXANDER, *supra* note 54, at 85.

identify these qualities in others facilitates the avoidance of cheaters. For the person who wants to be helped, whether or not she intends to reciprocate, it is beneficial to manifest these qualities, sham or otherwise.⁷⁶ In other words, the reciprocator wants to send true signals that she is trustworthy,⁷⁷ and the cheater wants to send similar signals, though they are false.⁷⁸ Insofar as persons contemplating aiding others cannot discern the signals or distinguish true ones from false ones,⁷⁹ reciprocal altruism will be undermined and even driven out. This may lead to a form of a signaling arms race where cheaters become more deceptive and cooperators become better at detecting deception and producing honest signals of their own trustworthiness.⁸⁰ Among other mechanisms, one way to become better at deception is by means of self-deception.⁸¹ False signals of trustworthiness are less likely to be discernible if the cheater herself self-deceptively believes she actually is a "good person" who would do the right thing when appropriate.⁸²

⁷⁶ See TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 389.

⁷⁷ "A signal is any costly action that, if successful, reveals the type of the sender. A signal can distinguish a cooperator and a cheater only if the cooperator can afford to issue the signal and the cheater cannot." Eric A. Posner, *Symbols, Signals, and Social Norms in Politics and the Law*, 27 J. LEGAL STUD. 765, 768 (1998). "It should be emphasized that signals may be ambiguous: gift giving, for example, may reflect a person's generosity or altruism rather than his discount rate." *Id.* at 768-69. Because character is difficult to observe, Cooter refers to it as "translucent—not opaque and not transparent." Robert Cooter, *Models of Morality in Law and Economics: Self-Control and Self-Improvement for the "Bad Man" of Holmes*, 78 B.U. L. REV. 903, 922 (1998).

⁷⁸ Deceptive abilities have been naturally selected. See, e.g., FRANK, *supra* note 68, at 9-11; Trivers, *Reciprocal Altruism*, *supra* note 54, at 50.

⁷⁹ The germinal analysis of cheater detection is by Cosmides and Tooby. See Cosmides, *supra* note 61, at 163. For brief discussion, see, for example, BADCOCK, *supra* note 17, at 106-10; BUSS, *supra* note 8, at 261-66; CARTWRIGHT, *supra* note 7, at 198-202; see also McCabe, *supra* note 16, at 147.

⁸⁰ See Trivers, *Reciprocal Altruism*, *supra* note 54, at 50. Children as young as three or four develop some ability to discern trustworthiness. See HAUSER, *supra* note 5, at 280-82; Eric Nagourney, *Whom to Believe? Children Find Out Early*, N.Y. TIMES, May 6, 2008, at F6. Some researchers "have found . . . that the capacity of subjects to predict whether others would play cooperatively or not was significantly better than chance following a face-to-face group discussion." Elinor Ostrom, *Toward a Behavioral Theory Linking Trust, Reciprocity, and Reputation*, in TRUST AND RECIPROCITY, *supra* note 13, at 19, 51 (with citations). On the other hand, humans are not very good at detecting lies. One may even say we are "pretty pathetic" at this. GAZZANIGA, *supra* note 28, at 103. See generally PAUL EKMAN, *TELLING LIES: CLUES TO DECEIT IN THE MARKETPLACE, MARRIAGE AND POLITICS* (3d ed. 2002).

⁸¹ "Nothing is easier than self-deceit. For what each man wishes, that he also believes to be true." DEMOSTHENES, THIRD OLYNTHIAC § 19, *quoted in* Donald C. Langevoort, *Where Were the Lawyers? A Behavioral Inquiry Into Lawyers' Responsibility for Clients' Fraud*, 46 VAND. L. REV. 75, 95 (1993).

⁸² See PINKER, *supra* note 67, at 421-23; TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 415-20. "Extensive research shows that self-deception is indeed both

Some signals of personal qualities are difficult to fake. For example, an excellent way of demonstrating that one is dependable is to actually be dependable when called upon.⁸³ This costly signaling falls within the handicap theory.⁸⁴ Just as a peacock pays a heavy, unavoidable price for its splendid tail to prove to peahens that it has strong genes, so would the sacrifices to carry out one's commitments show that one is likely to be dependable in the future. One has not only talked the talk, but also walked the walk. More generally, showing a costly moral trait in one context, as where one volunteers at a soup kitchen, reveals a moral quality that may well carry over to the context of a cooperative commitment.⁸⁵

Freeriding, then, is the major threat to the endurance of reciprocal altruism. Cheating detection mechanisms will not always be ahead in the arms race. Caution may be called for. As

widespread and highly effective. People tend to interpret their own actions in the most favorable possible light, erecting complex belief systems riddled with self-serving biases." FRANK, *supra* note 68, at 131-33. See generally Randolph M. Nesse & Alan T. Lloyd, *The Evolution of Psychodynamic Mechanisms*, in *THE ADAPTED MIND*, *supra* note 7, at 601. On the other hand, when it comes to hypocrisy, there is evidence that we are not entirely self-deceived. See John Tierney, *Deep Down, We Can't Fool Even Ourselves*, N.Y. TIMES, July 1, 2008, at F6. Frank predicted this. "Once [self-deception] becomes sufficiently widespread, it becomes self-defeating. The only stable outcome will be one in which at least some people have less than perfect capacity for self-deception." FRANK, *supra* note 68, at 132.

⁸³ "Faking good character is an art that requires talent and skill, especially in enduring relationships. In some circumstances, acquiring good character is the cheapest way to appear to have it." Cooter, *supra* note 77, at 922 (footnote omitted).

⁸⁴ If a signal is not costly, then it can be easily faked, and hence would be unreliable. See generally AMOTZ ZAHAVI & AVISHAG ZAHAVI, *THE HANDICAP PRINCIPLE* (1997); see also, e.g., PINKER, *supra* note 67, at 405; Posner, *supra* note 77, at 769 ("[T]o the extent that the signals have the wrong cost structure, cheaters will mimic the signals in order to avoid revealing to the receiver that they belong to the low type."); Trivers, *Reciprocal Altruism*, *supra* note 54, at 50.

⁸⁵ See, e.g., Paul W. Andrews, *The Psychology of Social Chess and the Evolution of Attribution Mechanisms: Explaining the Fundamental Attribution Error*, 22 *EVOLUTION & HUM. BEHAV.* 11, 23 (2001) (discussing altruism as a display of cooperative intent useful in choosing social partners). But under what is known as the fundamental attribution error, one must be cautious about generalizing behavior from one situation to another. See, e.g., Robert L. Woolfolk et al., *Identification, Situational Constraint, and Social Cognition*, in *EXPERIMENTAL PHILOSOPHY* 61, 61-62 (Joshua Knobe & Shaun Nichols eds., 2008); Jon Hanson & David Yosifon, *The Situation: An Introduction to the Situational Character, Critical Realism, Power Economics, and Deep Capture*, 152 *U. PA. L. REV.* 129, 136 (2003) ("Our proclivity is to underestimate the role of situational influences, and to overestimate the influence of individual dispositions in explaining people's behavior."); Rachana Kamtekar, *Situationism and Virtue Ethics on the Content of Our Character*, 144 *ETHICS* 458, 458 (2004) ("[U]nder experimental conditions, people's behavior is not found to be cross-situationally consistent (the likelihood that a person who has behaved helpfully on one occasion will behave helpfully on the next is hardly above chance.); John Sabini & Maury Silver, *Lack of Character? Situationism Critiqued*, 115 *ETHICS* 535, 540-49 (2005). For further limits to any behavioral carryover, see *infra* note 95 and accompanying text.

exemplified by the iterated prisoner's dilemma,⁸⁶ a quite successful strategy is to rely upon tit-for-tat: I will cooperate the first time, and then I will either cooperate or not depending on what you did the last time.⁸⁷ But this will not work where the interaction is not iterated, as in the original prisoner's dilemma scenario where the parties are not likely to associate again. Deterrence can work in this circumstance. As mentioned above, punishing the freerider sends a message to her and to others.⁸⁸ But a next step may also be needed. Since punishment is a costly public good, that is, it is socially beneficial to third parties, there may be freeriding on the punitive enforcement actions of others.⁸⁹ This can be addressed by punishing not only the original freerider, but also those who decline to punish this freerider.⁹⁰

Reputation effects are another means of deterrence. The exploited person, fooled once, is less likely to be fooled twice by the same person or others. A shady reputation may trigger caution by others, just as a good reputation signals trustworthiness.⁹¹ Some commentators contend that one of the

⁸⁶ See generally AXELROD, *supra* note 69; POUNDSTONE, *supra* note 61.

⁸⁷ See, e.g., Lee A. Dugatkin, *Game Theory and Cooperation*, in *GAME THEORY AND ANIMAL BEHAVIOR* 38, 39 (Lee A. Dugatkin & Hudson K. Reeve eds., 1998). For recent refinements, see *id.* at 41-44. See generally AXELROD, *supra* note 62; AXELROD, *supra* note 69. For tit-for-tat to work well, a person must have the cognitive wherewithal to distinguish innocent failures to cooperate from intentional ones. See Leda Cosmides & John Tooby, *Can a General Deontic Logic Capture the Facts of Human Moral Reasoning? How the Mind Interprets Social Exchange Rules and Detects Cheaters*, in *1 MORAL PSYCHOLOGY* 52, 102-03 (Walter Sinnott-Armstrong ed., 2008). While the tendency to play tit-for-tat may be selected for, it may not generalize beyond the EEA. In discussing the implications of the game-theoretic analysis of evolution, one commentator notes that "we should [not] expect organisms to be equipped with cognitive machinery that detects when they are in any situation that has the structural properties of the prisoner's dilemma and use a behavioral strategy that corresponds with tit-for-tat." Kurzban, *supra* note 13, at 110. Instead, what would emerge are the "cognitive systems designed to play the behavioral instantiation of a strategy similar to tit-for-tat" in the domain of the organism's social world in which it was selected. *Id.*

⁸⁸ See *supra* note 75 and accompanying text.

⁸⁹ See Boyd, *supra* note 69, at 241 (explaining punishers in terms of group selection).

⁹⁰ See AXELROD, *supra* note 69, at 55; LOW, *supra* note 11, at 153. Important influences on the maintenance of reciprocal altruism are: "(1) strong and widespread norms, (2) strong socially imposed costs and benefits, (3) punishment of cheaters (including those who do not enforce the norms), and (4) low cost of imposing the norms." LOW, *supra* note 11, at 154. Yet there may be payoffs for those who punish cheaters. In one study, "players who punish cheaters gain trust and respect and are thought of as being group focused. The benefits of this increase in good reputation (which . . . is a fitness indicator for sexual selection) can offset the costs of being a punisher . . ." GAZZANIGA, *supra* note 28, at 102.

⁹¹ See FRANK, *supra* note 68, at 90-93.

functions of gossip is to spread information about the reliability of others.⁹²

Since the ability to discern trustworthiness is limited, a range of related behavior may evolve. The classical example in evolutionary theory is the hawk-dove game.⁹³ In this game, one person, the hawk, tries to take advantage of the cooperative tendencies of another, the dove. When two doves interact, they divide a surplus from their cooperative behavior, as in a classic market transaction. When a dove interacts with a hawk, the hawk takes advantage of the dove's trust and reaps a gain, while the dove suffers a loss, as in a case of contract breach or embezzlement. Finally, when two hawks interact, both suffer losses. Consequently, all else equal, the more doves there are, the more it pays to be a hawk, and vice versa, the mix of doves and hawks depending on the values in the payoff matrix. Of course, there is not likely to be just one type of hawk or dove, but rather people would vary in their degree of these traits and the situations in which they played one role or another.⁹⁴ For example, a person may be quite trustworthy in a social surrounding and nasty in a business one, or belligerent before her first cup of coffee in the morning and cooperative thereafter, or aggressive when buying a car but casual when booking a hotel room.⁹⁵ This suggests that the payoff matrix in such evolutionary games is not unitary or fixed, and may be extraordinarily intricate.⁹⁶ But in a relatively static

⁹² See ROBIN DUNBAR, GROOMING, GOSSIP, AND THE EVOLUTION OF LANGUAGE 171-75 (1996); GAZZANIGA, *supra* note 28, at 95 ("Gossip may have evolved partly as a way to control the slackers."). "In the natural world, of course, humans (and no doubt other social animals) employ a wide range of processes for gathering information about the intentions and capacities of others," including gossip, stereotypes and other heuristics, use of a "theory of mind", and past experience. James Hanley, et al., *Conflict, Interpersonal Assessment, and the Evolution of Cooperation: Simulation Results*, in TRUST AND RECIPROcity, *supra* note 13, at 170, 176.

⁹³ See DAVID P. BARASH, THE SURVIVAL GAME 215-24 (2003); ELLIOTT SOBER, PHILOSOPHY OF BIOLOGY 139-43 (2d ed. 2000); KIM STERELNY & PAUL E. GRIFFITHS, SEX AND DEATH 236-38 (1999); FERNANDO VEGA-REDONDO, EVOLUTION, GAMES, AND ECONOMIC BEHAVIOUR 15-17 (1996); Peter Hammerstein, *What Is Evolutionary Game Theory?*, in GAME THEORY AND ANIMAL BEHAVIOR, *supra* note 87, at 3. See generally JOHN MAYNARD SMITH, EVOLUTION AND THE THEORY OF GAMES (1982).

⁹⁴ See, e.g., BARASH, *supra* note 93, at 224-32 ("Bullies, Bourgeois, and Other Complications").

⁹⁵ "We are all familiar with modern cases in which the kind of person who in many respects behaves very virtuously can become narrow and intolerant in an unusual case that seems to call for a different style of behavior." Joel J. Kupperman, *Classical and Sour Forms of Virtue*, in MORALITY AND SELF-INTEREST, *supra* note 12, at 272, 284.

⁹⁶ Cf. KEN BINMORE, GAME THEORY AND THE SOCIAL CONTRACT: JUST PLAYING 208 (1998) ("The set of available cooperative equilibria depends on the game

environment, the result will tend towards a balance in which the costs and benefits of being a dove or a hawk (of various types) will equalize.

While there are other evolutionary games,⁹⁷ the hawk-dove game suffices to suggest that moral impulses, or their absence, would be advantageous in coping with the conflicting interests. For the hawk, having no moral compunctions about advantage-taking would reduce the psychic costs of preying on doves, and may facilitate deception by avoiding signals of guilt or shame. This may be a benefit of psychopathy, a condition in which a person is without a conscience and is incapable of sympathizing with others, and hence, doesn't feel their pain.⁹⁸ On the other hand, for interactions between two hawks, it may be beneficial to have a righteous indignation or other strong emotion as a signal to the other hawk that one is not to be trifled with. For that matter, these types of emotions would seem useful for either a dove or a hawk when they interact with one another and even, perhaps, in dove-dove relations, just to keep the other dove dovish. Contrariwise, positive emotions, such as appreciation and gratitude would also be relevant to these games as, among other things, useful signals to other parties. Indeed, as the game aspect of interactions is elaborated, we see some of the complexities of Trivers' original theory of reciprocal altruism playing out in finely spun webs of interactional costs and benefits. The bottom line, again, is that predictions based on evolutionary principles of the type and strength of moral dispositions subject to natural selection depend on a vast array of variables, including changes over time.

Circumstances, it has already been seen, play an important role in the emergence of reciprocal altruism. For further example, the person simply passing through the community is less likely to be in a position to later reciprocate,

of life. . . . But real games of life must be expected to have vast numbers of equilibria among which Nature must choose.”).

⁹⁷ See generally SMITH, *supra* note 93.

⁹⁸ See Nesse, *supra* note 48, at 25 (referring to “a theory of sociopathy as a frequency-dependent strategy that succeeds when it is rare in comparison to the proportion of cooperators who, when prevalent, let down their guard”). “Psychopathy is a personality disorder characterized by a profound lack of empathy and guilt or remorse, shallow affect, irresponsibility, and poor behavior controls. The psychopath's behavioral repertoire has long led clinicians to suggest that they are ‘without conscience.’” Kent A. Kiehl, *Without Morals: The Cognitive Neuroscience of Criminal Psychopaths*, in 3 MORAL PSYCHOLOGY, *supra* note 4, at 119, 119 (reference omitted). That lack of sympathy or empathy is only part of the problem with psychopaths, see McGreer, *supra* note 71, at 227.

directly or indirectly, and is less likely to have local sympathizers who would feel obligated to act on her behalf. Reciprocation for generosity to a person with limited resources, modest abilities, reduced prospects from age, illness, etc., and fewer family and friends is improbable.⁹⁹ To the contrary are the persons at the other end of this spectrum, including those who trade on their reputations, such as civic and religious leaders.¹⁰⁰ Hence, in these situations, the choice to help another would, ideally, turn on a sophisticated calculation incorporating many factors and qualities, if the cognitive wherewithal is up to the task.

The cognitive wherewithal needed for the task again relates to the EEA in which the impulses emerged. If, for example, the EEA occurred when tribes or clans were isolated, with little or no interactions with strangers, then the disposition to help anyone in need may suffice since there would be minimal risk that aided parties would disappear before they, or their sympathizers, could reciprocate.¹⁰¹ Similarly, if social conditions in the EEA were fully egalitarian, then there would be little or no advantage to developing the dispositional distinctions between the powerful and the weak, and perhaps even the talented and the challenged, rich and poor, young and old, etc. In sum, then, if the EEA matched the extreme one discussed above in which kin selection would be adequately served by the impulse to "help everyone," reciprocal altruism would be served by the same universalized impulse. Some commentators even contend that the benefits of reciprocal altruism are not likely to be sufficient to trigger the incipient dispositions unless the advantages are supported or reinforced by those from kin selection. That is, reciprocal

⁹⁹ "[A]ny asymmetries among the individuals in their ability to affect each other will decrease the possibilities for altruistic exchanges." TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 362. The aged have less time for direct reciprocation, *see id.* at 388-89, but also less reason not to reciprocate, *see* Trivers, *Reciprocal Altruism*, *supra* note 54, at 46.

¹⁰⁰ *See* ALEXANDER, *supra* note 54, at 85; BARKOW, *supra* note 39, at 54; Richard D. Alexander, *Biological Considerations in the Analysis of Morality*, in *EVOLUTIONARY ETHICS* 163, 179 (Matthew H. Nitecki & Doris V. Nitecki eds., 1993).

¹⁰¹ Singer believes that kin selection and reciprocal altruism would tend to select out altruistic impulses towards strangers. *See* PETER SINGER, *THE EXPANDING CIRCLE* 134-40 (1981). That people are altruistic to strangers results, he opines, from the capacity to reason. *See id.*; *see also* MAYR, *supra* note 13, at 81-85 (reason and culture drive altruism beyond inclusive fitness).

altruism will not even get off the ground unless kin selection is in place to kick start it.¹⁰²

Again, as for kin selection, the EEA in which reciprocal altruism evolved is not likely to be uniform or stable. Seemingly, the range of cognitive abilities and social structures must have changed over time and place, and not in a regular, linear fashion. Interweavings (hybridizing) with other human groups, EEAs, and other evolutionary forces such as kin selection, leave impulses arising from reciprocal altruism to the realm of the empirical sciences, not deduction from basic theory. The circumstances during the evolution of relevant moral impulses are critical, and are largely subject to speculation. But still, it would seem that reciprocal altruism would generally tend towards particular moral dispositions directed beyond kin alone, and at anyone with whom one might enter a cooperative relationship.

C. *Sexual Selection*

While the phrase “survival of the fittest” roughly points toward one of the struggles facing organisms, the benchmark for Darwinian evolution is reproduction, and not simply survival. A long life will not, by itself, leave its traces in the gene pool. To spread their genes, organisms must not only compete with others for survival, but also for mates and matings.¹⁰³ Darwin referred to this latter competition as “sexual selection.”¹⁰⁴

¹⁰² See BARKOW, *supra* note 39, at 55-57; JOHNSTON, *supra* note 67, at 86; LIONEL TIGER, *THE MANUFACTURE OF EVIL* 324 (1987); Krebs, *supra* note 54, at 337, 357. If kin selection is not a prerequisite to reciprocal altruism, at least it is a help. See LOW, *supra* note 11, at 154; Sapolsky, *supra* note 55, at 24. The mutual reinforcement of kin selection and reciprocal altruism in ancestral environments may have left humans with an impulse for reciprocal altruism greater than is evolutionarily fit in a modern environment. See Avner Ben-Ner & Louis Putterman, *Values and Institutions in Economic Analysis*, in *ECONOMICS, VALUES, AND ORGANIZATION* 3, 32 (Avner Ben-Ner & Louis Putterman eds., 1998); Charles Crawford, *The Theory of Evolution in the Study of Human Behavior: An Introduction and Overview*, in *HANDBOOK OF EVOLUTIONARY PSYCHOLOGY*, *supra* note 17, at 3, 26.

¹⁰³ Recall that these two terms distinguish intercourse with established partners from that with others. See *supra* note 30 and accompanying text.

¹⁰⁴ See CHARLES DARWIN, *THE ORIGIN OF SPECIES, in THE ORIGIN OF SPECIES; THE DESCENT OF MAN* part II (Modern Library n.d.) (6th ed. 1872). See generally BADCOCK, *supra* note 17, at 149-88; DAVID P. BARASH, *SOCIOBIOLOGY AND BEHAVIOR* 152-72 (1977); DAVID M. BUSS, *THE EVOLUTION OF DESIRE* (1994); CRONIN, *supra* note 18, at 111-249; GOULD, *supra* note 52 at 3-4; LOW, *supra* note 11; MILLER, *THE MATING MIND*, *supra* note 55. Darwin formulated two forms of sexual selection: “intersexual selection (often typified by female choice of males) and intrasexual selection (often

The two sexes in a sexual species, such as mammals, do not bring the same resources to the reproductive process. Female mammals, for example, provide the more valuable resources in the form of nutrient-rich eggs and internal gestation of the fertilized eggs. Males need only produce sperm, which is not resource costly, and may not be essential after fertilization to the success of their offspring. For females, it is quite another story. Upon birth, females, through lactation, typically supply most or all of the nourishment to newborns and youngsters, and do most of the child care-giving.¹⁰⁵ Having already invested so much in the children, they are particularly interested in seeing that the offspring become successful breeders. In general, then, the necessary female contribution to reproduction is costly and limiting, while the male share is quite to the contrary.¹⁰⁶ This asymmetry in the essential resources supplied by females and males for reproduction implies that their breeding interests diverge, which, in turn, implies that their behavioral dispositions differ as well.¹⁰⁷ Among other things, when it comes to mating, females are disposed to seek quality while males, along with quality, have little to lose and much to gain from quantity alone.¹⁰⁸

typified by the male-male competition for access to females)." DONALD E. BROWN, *HUMAN UNIVERSALS* 103 (1991).

¹⁰⁵ See MELVIN KONNER, *WHY THE RECKLESS SURVIVE* 7 (1990) ("Women have done more child care than men in every human society on record.").

¹⁰⁶ Which is not to say that males do not expend much energy in producing offspring. "[B]ut this effort is more often expended in fighting and displaying than in large zygotes and care of the young." GOULD, *supra* note 52, at 239.

¹⁰⁷ The theoretical consequences of these differences were first developed by Trivers. See Robert L. Trivers, *Parental Investment and Sexual Selection*, in *SEXUAL SELECTION AND THE DESCENT OF MAN 1871-1971* 136 (Bernard G. Campbell ed., 1972) [hereinafter Trivers, *Parental Investment*]. For dissenting viewpoints, see ANNE FAUSTO-STERLING, *MYTHS OF GENDER* 179-203 (2d ed. 1992) and SARAH B. HRDY, *THE WOMAN THAT NEVER EVOLVED* 130-38 (1981). See generally CRONIN, *supra* note 18, at 113-249; TIMOTHY H. GOLDSMITH, *THE BIOLOGICAL ROOTS OF HUMAN NATURE* 47-69 (1991); GOULD, *supra* note 52, at 249-68; LOW, *supra* note 11, at 37-44. The differences in behavioral dispositions follow from the differences in mating strategies between men and women. For evidence in support of differing mating strategies, see, for example, BUSS, *supra* note 104; David M. Buss, *Mate Preference Mechanisms: Consequences for Partner Choice and Intrasexual Competition*, in *THE ADAPTED MIND*, *supra* note 7, at 249; William Irons, *Anthropology*, in *THE SOCIOBIOLOGICAL IMAGINATION* 71, 86-89 (Mary Maxwell ed., 1991) (anthropological evidence of differences). See generally *THE ADAPTED MIND* *supra* note 7, at part III ("The Psychology of Mating and Sex"). Overall, the similarities in dispositions of men and women are greater than the differences. See THIESSEN, *supra* note 47, at 326.

¹⁰⁸ See, e.g., MILLER, *THE MATING MIND*, *supra* note 55, at 86; Trivers, *Parental Investment*, *supra* note 107, at 74; David M. Buss, *The Psychology of Human Mate Selection: Exploring the Complexity of the Strategic Repertoire*, in *HANDBOOK OF EVOLUTIONARY PSYCHOLOGY*, *supra* note 17, at 405, 412-14, 423-24.

Because female mammals provide the more valuable resources, women, and their supporters, generally demand more from males than a supply of sperm.¹⁰⁹ Female preferences typically include a significant commitment from males to support them and contribute to the raising of their children.¹¹⁰ Among the qualities of a male that presumably facilitate this goal, David Buss includes social status, dependability and stability, love and commitment cues, positive interactions with children, bravery, and kindness.¹¹¹ Men, also, before entering into a long-term commitment, seek attributes in a mate that will be beneficial to them and their offspring.¹¹² Studies have shown that the preferences of women and men for a mate are quite similar.¹¹³ In particular, Geoffrey Miller reports that the highest rated personality attribute by both females and males is agreeableness.¹¹⁴ This is associated with compassion, lovingness, sincerity, trustworthiness, and altruism.¹¹⁵ Miller

¹⁰⁹ Since women must invest more in reproduction than men, they are a valuable resource to men who must then compete for women. See, e.g., MILLER, *THE MATING MIND*, *supra* note 55, at 85-87; Buss, *supra* note 108, at 410-11. This leads to "female choice." See, e.g., GOULD, *supra* note 52, at 175-209. But "there has been considerable controversy over the existence of selection by female choice." *Id.* at 86.

¹¹⁰ Contrary to other mammals, "[h]umans are unusual in having evolved a mating/parenting system of intensive offspring care by both mothers and fathers, which favors social monogamy (at least medium-term pair-bonded relationships with expectations of sexual fidelity). This, in turn, can favor mutual mate choice by both males and females." Geoffrey Miller, *Kindness, Fidelity, and Other Sexually Selected Virtues*, in 1 *MORAL PSYCHOLOGY*, *supra* note 32, at 209, 218 [hereinafter Miller, *Sexually Selected Virtues*]. For the benefits for a man from a commitment to marriage, see BUSS, *supra* note 8, at 133 (including better mate attraction, paternity certainty, and children's survival and reproductive success). For the benefits to women from long-term mating, see Buss, *supra* note 108, at 416-17.

¹¹¹ See BUSS, *supra* note 8, at 104-30. See generally BUSS, *supra* note 104, at ch. 2 ("What Women Want"). For a challenge to some of the main studies by leading evolutionary psychologists supporting the mate preferences implied by sexual selection theory, see Chris Haufe, *Sexual Selection and Mate Choice in Evolutionary Psychology*, 23 *BIOLOGY & PHIL.* 115 (2008) (questioning Buss, Thornhill and Gangestad, and Miller).

¹¹² Relevant to males in a long-term relationship are: "(1) the female's youth and health (reproductive potential); (2) the quality of her genes (judged phenotypically); (3) the confidence in future paternity she inspires (her reputation); and (4) her ability to produce and control resources for parental investment." BARKOW, *supra* note 39, at 357. See Buss, *supra* note 108, at 414-16.

¹¹³ See, e.g., BUSS, *supra* note 8, at 134-35; GOULD, *supra* note 52, at 258; MILLER, *THE MATING MIND*, *supra* note 55, at 330; Buss, *supra* note 108, at 419-21. Sexual selection "implies that both sexes evolved the complementary adaptations for morality: moral virtues that tend to be displayed selectively in high-payoff social and sexual contexts, and person-perception mechanisms for judging the moral virtues of others." Miller, *Sexually Selected Virtues*, *supra* note 110, at 218.

¹¹⁴ See MILLER, *THE MATING MIND*, *supra* note 55, at 330.

¹¹⁵ See *id.* Hence, altruism towards strangers is not an evolutionary conundrum, see *supra* note 101 and accompanying text, "[i]t is a sexual ornament," MILLER, *THE MATING MIND*, *supra* note 55, at 339. According to Miller, "sexual

reports that “research has confirmed that many particular moral virtues are sexually attractive and relationship stabilizing,” including kindness, sympathy, empathy, niceness, sportsmanship, honesty, moral leadership, generosity to partner, children, and strangers, sexual fidelity, charitable generosity, heroism, and capacity for self-control, self-respect, and self-disclosure.¹¹⁶ Many, if not all, of the qualities identified by Buss and Miller relate to morals,¹¹⁷ or have moral overtones.¹¹⁸

Most of the cognitive skills necessary to discern the moral qualities of a mate would seem to be similar to those associated with reciprocal altruism. The main problem, again, may be deception. Both women and men may benefit from false signals of high moral qualities, such as altruism, trustworthiness, and commitment.¹¹⁹ For example, for the

selection may have augmented the capacity for altruism in a runaway escalation.” Nesse, *supra* note 48, at 33 (citing MILLER, *THE MATING MIND*, *supra* note 55).

¹¹⁶ Miller, *Sexually Selected Virtues*, *supra* note 110, at 222. See MILLER, *THE MATING MIND*, *supra* note 55, at 293. As other sexually attractive traits with “quasi-moral status”, Miller includes creativity, artistic virtuosity, achieving social status through merit, and acquiring wealth through merit. *Id.* at 229.

¹¹⁷ Miller claims sexual selection as the font of most of the human sense of morality, see MILLER, *THE MATING MIND*, *supra* note 55, at 292-340 (“Virtues of Good Breeding”), but not all of it, see *id.* at 339. So now, we have seen, some argue that kin selection is the source of morality, see *supra* notes 43-44 and accompanying text, others that reciprocal altruism is, see *supra* notes 71-72 and accompanying text, and now Miller completes the triangle. See generally RIDLEY, *supra* note 72. Even Darwin saw natural selection as likely to be the source of “a moral sense or conscience” for social organisms with sufficient cognitive abilities, though, of course, the three mechanisms discussed here had not yet been explicitly identified or developed. CHARLES DARWIN, *THE DESCENT OF MAN*, in *THE ORIGIN OF SPECIES; THE DESCENT OF MAN* 387, 471-72 (Modern Library n.d.) (1871).

¹¹⁸ For the meaning of “moral emotions”, see Moll et al., *supra* note 4.

“We feel lust for other people’s bodies, but we fall in love with their mental and moral traits. . . . The most romantically attractive mental traits—intelligence, wisdom, kindness, bravery, honesty, integrity, and fidelity—often have a moral or quasi-moral status.” Miller, *Sexually Selected Virtues*, *supra* note 110, at 209. Moral virtues “evolved to advertise one’s individual fitness in hard-to-fake ways that can be understood through a combination of sexual selection theory and costly signaling theory.” *Id.* (references omitted). “By contrast, in kin altruism, we may give higher weight to the kinship-specific virtues of genetic similarity and expected future reproductive success, while caring little about kindness, gentleness, or honesty.” *Id.* at 214.

For a dissenting view of the sexual selection of moral virtues, see Catherine Driscoll, *Why Moral Virtues Are Probably Not Sexual Adaptations*, in 1 *MORAL PSYCHOLOGY*, *supra* note 32, at 245, or, more generally, for an argument that there is no innate moral faculty, see, for example, Jesse J. Prinz, *Is Morality Innate?*, in 1 *MORAL PSYCHOLOGY*, *supra* note 32, at 367, 406 (“Morality is a by-product of other capacities”).

¹¹⁹ “[S]exual selection is a subset of the process we call signal selection.” ZAHAVI, *supra* note 84, at 91. That altruism is a costly signal, see *id.* at 225-27. See MILLER, *THE MATING MIND*, *supra* note 55, at 294 (“Morality is a system of sexually selected handicaps—costly indicators that advertise our moral character.”).

woman who may not succeed at attracting a highly desirable mate, the best option may be to find a less desirable one, through, say, deceptive commitments, who will naively support her and her offspring, and then do her mating with the better catch down the block.¹²⁰ Sexual selection suggests that many men would be disposed to accommodate her mating wishes so long as it was understood that they amount to nothing more than a discreet, one-night stand. She then would have for her children the good genes of their father(s),¹²¹ and the reliable support of her deceived mate.¹²² This knowledge by men of paternity uncertainty, on the other hand, may affect their moral dispositions to help kin, as they may be more certain that they are related, for example, to their sister's offspring than to their wife's.¹²³ As for the inclination of men to deceive

¹²⁰ While studies of cuckoldry rates widely vary in their findings and estimates, some have uncovered substantial percentages. See, e.g., NANCY L. SEGAL, *ENTWINED LIVES* 39 (1999) (5 to 30%); THIESEN, *supra* note 47, at 323 (5 to 40+%); Serge Brédart & Robert M. French, *Do Babies Resemble Their Fathers More Than Their Mothers? A Failure to Replicate Christenfeld and Hill (1995)*, 20 *EVOLUTION & HUM. BEHAV.* 129, 130 (1999) (6 to 30%); Steven M. Platek et al., *Reactions to Children's Faces: Males Are More Affected by Resemblance than Females Are, and so Are Their Brains*, 25 *EVOLUTION & HUM. BEHAV.* 394, 395 (2004) (1 to 20%).

The proposed benefits for multiple mates for women "include obtaining high-quality genes, increasing the genetic diversity of offspring, promoting sperm competition, extracting immediate resources, confusing paternity (and hence securing benefits from various potential fathers), obtaining protection, and evaluating a mate as a long-term partner." Anne Campbell, *The Morning After the Night Before: Affective Reactions to One-Night Stands Among Mated and Unmated Women and Men*, 19 *HUM. NATURE* 157, 158 (2008). For these and other benefits to women from short-term mating, see BARKOW, *supra* note 39, at 338-39; BUSS, *supra* note 104, at 90-91; BUSS, *supra* note 8, at 176-82. See TRIVERS, *SOCIAL EVOLUTION*, *supra* note 24, at 330-60.

¹²¹ See CRONIN, *supra* note 18, at 191-201 (meanings of "good genes"); GOULD, *supra* note 52, at 192-96 ("good genes" hypothesis); Trivers, *Parental Investment*, *supra* note 107, at 97-100 (meaning of "good genes"). "Women seeking a long-term mate are more attracted to niceness, whereas women seeking a short-term mate are more attracted to physical appearance." Miller, *Sexually Selected Virtues*, *supra* note 110, at 223. Physical appearance, that is, attractiveness, is a signal of good genes since, for one, it is an indication of disease resistance. See, e.g., THIESEN, *supra* note 47, at 126; B.C. Jones et al., *Facial Symmetry and Judgements of Apparent Health: Support for a "Good Genes" Explanation of the Attractiveness-Symmetry Relationship*, 22 *EVOLUTION & HUM. BEHAV.* 417 (2001); Paul Wehr et al., *Stabilizing and Directional Selection on Facial Paedomorphosis*, 12 *HUM. NATURE* 383 (2001).

¹²² That it may not be adaptive for women to agree to one-night stands is suggested by evidence that women have a significantly more negative reaction to them than do men. See Anne Campbell, *supra* note 120, at 157. Nevertheless, "[d]espite the costs, surveys suggest that 22-25% of men and 11-15% of married women have engaged in extramarital sex." *Id.* at 160. For other estimations of rates of extramarital sex (i.e., cuckoldry), see *supra* note 120 and accompanying text.

¹²³ This uncertainty over paternity affects the willingness of males and their relatives to invest in kin. See Gregory D. Webster, et al., *Lineage, Sex, and Wealth as Moderators of Kin Investment: Evidence from Inheritances*, 19 *HUM. NATURE* 189, 190-91 (2008).

women with false avowals of commitment in order to get them into bed, well, is a footnote really necessary?

The moral impulses stemming from sexual selection may be more general than is true of kin selection or reciprocal altruism. That is, the moral dispositions would favor a broad range of people, perhaps everyone, and not simply those who are related or potential reciprocators. To see this, let us consider an EEA that is the opposite of the one discussed above in which clans were isolated from outsiders. Let us make it a miniature of the modern world in which daily activities include interactions or path-crossings with a vast array of diverse persons, many of whom will never be seen again. Now let us assume that a person wishes to demonstrate to a potential mate some of the moral, or moral-related, qualities mentioned above. Of particular relevance to this scenario would be such qualities as dependability, positive interactions with children, bravery, kindness, compassion, trustworthiness, and altruism. A person who revealed these traits in an interaction with a complete stranger passing through could be expected to show them even more in a relationship with a mate or offspring.¹²⁴ In other words, a person who demonstrates sincere moral qualities when self-interest is at a minimum is likely to be moral, even more so, when self-interest is greater,¹²⁵ as when aiding one's own children. Of course, this is a mere generalization. We must worry about deception at work here, and about the person who may be altruistic to nonkin, but not kin, as in the case of a saintly person neglectful of family obligations.¹²⁶ And we must be concerned that the person attentive to strangers may dilute the resources available to family.¹²⁷ But still, the moral impulses that arise in these

¹²⁴ But caution is called for by the fundamental attribution error. *See supra* note 85 and accompanying text.

¹²⁵ Similar reasoning would apply to the willingness to trust this person under reciprocal altruism. I leave aside the conundrum raised by the definition of moral actions as those that are contrary to, or independent of, self-interest. *See supra* note 12 and accompanying text.

¹²⁶ This sounds like the stuff of novels. *Cf. LOW, supra* note 11, at 113 ("The fact that a man bears an excellent reputation among men, is no proof that he may not be the worst possible companion for a woman.") (quoting ELLA WHEELER WILCOX, *MEN, WOMEN, AND EMOTIONS* (1893)).

¹²⁷ *See Krebs, supra* note 54, at 337, 351-52. "[T]he fitness losses to the partner incurred by a mate's extrafamilial caring would virtually always seem to outweigh the gains." *Id.* at 352. Yet, to the contrary, it would seem that such caring could bring status to the whole family that would outweigh losses, as in the case of philanthropy by the wealthy, but also for moderate charitable activities by many others.

circumstances from sexual selection would seem to be more inclusive than those from kin selection or reciprocal altruism.

Let us return to an EEA in which clans are isolated and interactions with outsiders are minimal. Even here we might find inclusive moral impulses emerging for much the same reason as in the case of a cosmopolitan EEA. Since the moral traits useful for signaling that a person would make a good mate are largely demonstrated irrespective of who is the recipient of the moral behavior, there would be reduced sexual selection advantage for genes that facilitate discrimination between neighbor and stranger, or kin and others. Furthermore, this narrow, closed environment also lessens the benefits of cognitive distinctions among recipients of moral behavior for purposes of kin selection and reciprocal altruism, since nearly everyone around is kin or an expected reciprocator. Therefore, there would be that much more reason to expect widely general moral impulses to emerge in this environment. The forces of sexual selection would point to a broad generosity, and the forces of kin selection and reciprocal altruism are less likely to point in a different direction. In sum, morally commendable behavior towards a stranger, whether strangers are rare or common, signals a personality that is prone to be dependable to kith and kin alike.

III. CONCLUSION

The three theories of evolutionary biology that suggest the existence of innate moral dispositions—kin selection, reciprocal altruism and sexual selection—do not, in principle, point towards the same dispositions. Kin selection implies that moral impulses would be directed towards kin—the closer the kin the stronger the impulse, all else equal. But all else is usually not equal, in which case kin selection goes on to predict that the strength of moral impulses towards particular kin also turns on, among other things, the likelihood that the relative would produce descendants or aid other kin to do so.

Reciprocal altruism widens the scope of the objects of moral impulses. It implies that positive moral dispositions would be directed towards those with whom one has, or may establish, a cooperative relationship involving trust, regardless of relation. The greater the probable benefits from the cooperation, the greater the moral disposition. But reciprocal altruism also predicts that negative moral impulses, such as

spite or moralistic aggression, would be directed to those who betray trust or fail to punish those who betray it.¹²⁸

Sexual selection widens the scope of moral impulses even further. It implies that altruistic, moral behavior is a sexual ornament, like the peacock's tail, used to attract mates and matings. As such, the objects of the behavior are of less importance than the behavior itself, which is to demonstrate that the actor has traits that are attractive in a partner and in a parent, or, at least, in a sperm donor.

Thus, as we examine these three evolutionary forces in turn, we see an expanding circle of moral concerns, centered on close relatives but moving outward to the world at large. Yet before we celebrate this movement towards universality, we must consider chance and circumstances. These may throw a wrench into the works or, to the contrary, facilitate the broadest visions of morality.

All three evolutionary principles turn on cognitive skills. To mention some of them, under kin selection, one must be able to identify kinship relationships and calculate, consciously or otherwise, the benefits of aiding particular relatives. Reciprocal altruism turns on the discernment of trustworthiness and, again, the calculation of the benefits from a particular relationship based on trust. Sexual selection appears to have the fewest cognitive demands of the types just identified since it is more concerned with the actor's moral behavior than with the recipient of it. But sexual selection puts into focus a difficulty for any signaling system, including kin selection and reciprocal altruism, that is, the benefits of false signals. One can gain from having the traits preferred by a moral interactor, but also by deceiving that person into believing so. As a consequence, deceptive behavior, conscious or otherwise, may benefit. Hence, any mutations that facilitate useful deception will be favored by natural selection, as will those that improve the apprehension of deception by others. A cognitive arms race ensues.

A product of the cognitive arms race, among other things, is a reward for strategic behavior in exploiting the deficiencies of other parties and, contrariwise, in preventing such exploitation, as seen in the hawk-dove game. Insofar as moral impulses, or the lack thereof, are favored by evolutionary

¹²⁸ One would expect negative emotions to arise from kin selection as well, as a deterrent to those who might interfere with oneself and relatives.

games, the likely outcome on the population at large is extremely murky. It could range from a saintly altruism to a cynical psychopathy, all depending, in principle, on the payoff matrices. Adding to this the complexities of superimposing different types of evolutionary games, and different payoff matrices for each game that turn on circumstances, one is at a loss to make anything but the crudest armchair predictions of what moralities are likely to emerge.

Further difficulties for armchair predictors are the uncertainties of the circumstances in which human evolution took place. The cognitive abilities that would be favored by natural selection depend on the setting in which they are situated. In an EEA of small, isolated bands of close kin living in an abundant environment, identifying kin or cooperators is of less importance than would be the case in a cosmopolitan society struggling with limited resources. That there may have been a variety of EEAs at any one time, or that they may have changed over time, is further worry for the armchair predictor.

Having struggled with circumstances, the predictor must also make room for chance. Along with lightning bolts, mutation, a prime vehicle of evolution, is a random process. Its trajectory cannot be predicted, it can only be studied after the fact.¹²⁹ Moreover, fitness is satisfied by "good enough." It does not require perfection.

I do not mean to leave the reader with the view that evolutionary biology offers nothing to the moralist. It offers a great deal. It offers for the moral researcher predictions of the kinds of moral impulses that may exist. As some of the critical evolutionary factors are further narrowed by study of the EEA(s) and other circumstances, and the range of cognitive abilities and moral inclinations of humans are further clarified by works in the field and in the labs, these armchair predictions will continue to aid in identifying fruitful research directions. As for the law, which must accommodate and channel human behavior, this knowledge will help it achieve its purposes, whatever they may be.

So, in the end, yes, there are, apparently, universal moralities, and the law should care.

¹²⁹ "Like other organisms, we humans are designed to maximize reproductive success, but how we do so may be too complicated to incorporate into a tractable model." Randolph M. Nesse, *The Future of Commitment*, in *EVOLUTION AND THE CAPACITY FOR COMMITMENT*, *supra* note 48, at 310, 318.