

THE PROMISE OF THE DARWINIAN REVOLUTION

"[In the natural state] the life of man is solitary, poor, nasty, brutish, and short.

Thomas Hobbes, *Leviathan*.13 (1660)

Charles Darwin

The Descent of Man (1871)

Chapter 5 [Group selection]

[1] When two tribes of primeval man, living in the same country, came into competition, if (other circumstances being equal) the one tribe included a great number of courageous, sympathetic and faithful members, who were always ready to warn each other of danger, to aid and defend each other, this tribe would succeed better and conquer the other. Let it be borne in mind how all-important in the never-ceasing wars of savages, fidelity and courage must be. The advantage which disciplined soldiers have over undisciplined hordes follows chiefly from the confidence which each man feels in his comrades. Obedience, as Mr. Bagehot has well shewn,⁵ is of the highest value, for any form of government is better than none. Selfish and contentious people will not cohere, and without coherence nothing can be effected. A tribe rich in the above qualities would spread and be victorious over other tribes: but in the course of time it would, judging from all past history, be in its turn overcome by some other tribe still more highly endowed. Thus the social and moral qualities would tend slowly to advance and be diffused throughout the world.

But it may be asked, how within the limits of the same tribe did a large number of members first become endowed with these social and moral qualities, and how was the standard of excellence raised? It is extremely doubtful whether the offspring of the more sympathetic and benevolent parents, or of those who were the most faithful to their comrades, would be reared in greater numbers than the children of selfish and treacherous parents belonging to the same tribe. He who was ready to sacrifice his life, as many a savage has been, rather than betray his comrades, would often leave no offspring to inherit his noble nature. The bravest men, who were always willing to come to the front in war, and who freely risked their lives for others, would on an average perish in larger numbers than other men. Therefore it hardly seems probable, that the number of men gifted with such virtues, or that the standard of their excellence, could be increased through natural selection, that is, by the survival of the fittest; for we are not here speaking of one tribe being victorious over another.

[2] Although the circumstances, leading to an increase in the number of those thus endowed within the same tribe, are too complex to be clearly followed out, we can trace some of the probable steps. In the first place, as the reasoning powers and foresight of the members became improved, each man would soon learn that if he aided his fellow-men, he would commonly receive aid in return. From this low motive he might acquire the habit of aiding his fellows; and the habit of performing benevolent actions certainly strengthens the feeling of sympathy which gives the first impulse to benevolent actions. Habits, moreover, followed during many generations probably tend to be inherited . . .

It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over the other men of the same tribe, yet that an increase in the number of well-endowed men and an advancement in the standard of morality will certainly give an immense advantage to one tribe over another. A tribe including many members who, from possessing in a high degree the spirit of patriotism, fidelity, obedience, courage, and sympathy, were always ready to aid one another, and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection. At all times throughout the world tribes have supplanted other tribes; and as morality is one important element in their success, the standard of morality and the number of well-endowed men will everywhere tend to rise and increase . . .

Chapter 5, continued [The Dangers of Civilization]

[3] With savages, the weak in body or mind are soon eliminated; and those that survive commonly exhibit a vigorous state of health. We civilised men, on the other hand, do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of very one to the last moment. There is reason to believe that vaccination has preserved thousands, who from a weak constitution would formerly have succumbed to small-pox. Thus the weak members of civilised societies propagate their kind. No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but excepting in the case of man himself, hardly any one is so ignorant as to allow his worst animals to breed.

The aid which we feel impelled to give to the helpless is mainly an incidental result of the instinct of sympathy, which was originally acquired as part of the social instincts, but subsequently rendered, in the manner previously indicated, more tender and more widely diffused. Nor could we check our sympathy, even at the urging of hard reason, without deterioration in the noblest part of our nature. The surgeon may harden himself whilst performing an operation, for he knows that he is acting for the good of his patient; but if we were intentionally to neglect the weak and helpless, it could only be for a contingent benefit, with an overwhelming present evil. We must therefore bear the undoubtedly bad effects of the weak surviving and propagating their kind; but there appears to be at least one check in steady action, namely that the weaker and inferior members of society do not marry so freely as the sound; and this check might be indefinitely increased by the weak in body or mind refraining from marriage, though this is more to be hoped for than expected.

Rethinking the Theoretical Foundation of Sociobiology

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http://www.cogsci.msu.edu/DSS/2006-2007/Wilson/Rethinking_July_20.pdf

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Abstract

The current foundation of sociobiology is based upon the rejection of group selection in the 1960s and the acceptance thereafter of alternative theories to explain the evolution of cooperative and altruistic behaviors. These events need to be reconsidered in the light of subsequent research. Group selection has become both theoretically plausible and empirically well supported. Moreover, the so-called alternative theories include the logic of multilevel selection within their own frameworks. We review the history and conceptual basis of sociobiology to show why a new consensus regarding group selection is needed and how **multilevel selection theory** can provide a more solid foundation for sociobiology in the future.

Darwin identified a fundamental problem with social life in the following famous passage from *Descent of Man*:

It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over the other men of the same tribe...yet that an increase in the number of well-endowed men and advancement in the standard of morality will certainly give an immense advantage to one tribe over another.

Darwin realized that other-oriented behaviors are advantageous in competition with other groups, as surely as they are disadvantageous within groups. These insights would seem to provide an excellent foundation for the study of social behavior, but that is not what happened in the history of sociobiology. Group selection—the evolutionary force that favors other-oriented behaviors according to Darwin’s scenario—was widely rejected in the 1960s. Other theories, such as inclusive fitness theory, reciprocal altruism, evolutionary game theory, and selfish gene theory, were developed as alternatives to group selection and became the foundation for the study of social behavior in evolutionary biology . . .

The Logic of Multilevel Selection. During evolution by natural selection, a trait that increases the fitness of others in a group at the expense of the individual possessing the trait will decline in frequency and ultimately will go extinct. This is the fundamental problem that Darwin identified for traits associated with human morality, and it applies with equal force to altruistic behavior in other species. It is simply a fact of social life that individuals must do things for each other to function successfully as a group, and that these traits usually do not maximize relative individual fitness within the group.

Something more is required to explain how other-oriented traits evolve by natural selection. For Darwin that “something” was between-group selection. Other-oriented traits increase the fitness of groups, relative to other groups, even if they are selectively neutral or disadvantageous within groups. . .

The Theoretical Plausibility of Group Selection. All of the early models assumed that altruistic and selfish behaviors are caused directly by corresponding genes, which means that the only way for groups to vary *behaviorally* is for them to vary *genetically*. Hardly anyone regards such strict genetic determinism as biologically realistic today. And in fact it was assumed in the models primarily to simplify the mathematics.

The early models also assumed that variation among groups is caused primarily by sampling error, which means that it declines precipitously with the number of individuals that independently colonize each group and migration among groups during their existence. This assumption must be completely revised in the light of complex systems theory. Complex physical systems such as the weather exhibit *sensitive dependence on initial conditions*; even tiny initial differences are magnified into larger differences by deterministic interactions. In just the same way, small initial differences among social groups caused by sampling error can be magnified by deterministic social interactions into larger differences, upon which natural selection can act. . .

Acknowledging the theoretical plausibility of group selection is not a return to the bad old days of naïve group selection. It has always been the goal of population genetics to provide a complete accounting system for evolutionary change, including selection and mutation. The question is whether group selection can be categorically ignored when natural selection is divided into within- and between-group components. Few theoretical biologists would make this claim today, however reasonable it might have appeared in the 1960s.

Yet, the current consensus among theorists has not resulted in an appropriately revised theory, nor has it spread to the wider community of scientists interested in the evolution of social behavior. There is a form of naïve selectionism that needs to be corrected . . .

For two-person game theory, the cooperative tit-for-tat strategy never beats its social partner; it only loses or draws. The only reason that tit-for-tat or any other cooperative strategy evolves in a game theory model is because groups of cooperators contribute more to the total gene pool than groups of non-cooperators.

All of these models obey the following simple rule: *Selfishness beats altruism within single groups. Altruistic groups beat selfish groups.* The main exception to this rule involves models that result in multiple local equilibria, which are internally stable by definition. In this case, group selection can favor the local equilibria that function best at the group level, a phenomenon sometimes called “equilibrium selection.”

Dawkins envisioned selfish gene theory as an argument against group selection but in retrospect it is nothing of the sort. The concept of genes as “replicators” and “the fundamental unit of selection” is identical to the concept of average effects in population genetics, which averages the fitness of alleles across all genotypic, environmental, and social contexts. The average effect gives the bottom line of what evolves in the total population, the final vector that reflects the summation of all the component vectors. The whole point of multilevel selection theory, however, is to examine the *component vectors* of evolutionary change, based on the targets of selection at each biological level, and in particular to ask whether genes can evolve on the strength of between-group selection, despite a selective disadvantage within groups. Multilevel selection models calculate the average effects of genes, just like any other population genetics model, but the final vector includes both levels of selection and by itself cannot possibly be used as an argument against group selection. Both Williams and Dawkins eventually acknowledged their error, but it is still common to read in articles and textbooks that group selection is wrong because “the gene is the fundamental unit of selection” . . .

Human Evolution As a Major Transition. Anyone who studies humans must acknowledge our innately groupish nature and the importance of between-group interactions in human evolution. Ever since the 1960s, sociobiologists and evolutionary psychologists have been burdened with the task of explaining these obvious facts without invoking group selection. In retrospect, these explanations appear needlessly contorted. Instead, human evolution falls squarely within the paradigm of major transitions . . .

Our capacities for symbolic thought and the social transmission of information are fundamentally communal activities that probably required a shift in the balance between levels of selection *before* they could evolve. The human major transition was a rare event, but once accomplished our ability to function as members of coordinated groups enabled us to achieve worldwide ecological dominance. The parallels with the other major transitions are intriguing and highly instructive.

Group selection is an important force in human evolution in part because cultural processes have a way of creating phenotypic variation among groups, even when they are composed of large numbers of unrelated individuals. If a new behavior arises by a genetic mutation, it remains at a low frequency within its group in the absence of clustering mechanisms such as associations among kin. If a new behavior arises by a cultural mutation, it can quickly become the most common behavior within the group and provide the decisive edge in between-group competition. The importance of group selection in human evolution enables our groupish nature to be explained at face value. Of course, within-group selection has only been suppressed, not entirely eliminated. Thus *multi*-level selection, not group selection alone, provides a comprehensive framework for understanding human evolution along with other major transitions.

A New Consensus and New Theoretical Foundation for Sociobiology. Making a decision typically involves encouraging diversity at the beginning to evaluate alternatives, but then discouraging diversity toward the end to achieve closure and to act upon the final decision. It can be very difficult to revisit an important decision that has been made and acted upon, but that is precisely what needs to be done in the case of the 1960s consensus about group selection. Historians of science have made a start, including a recent article appropriately titled “The Rise, Fall, and Resurrection of Group Selection ,” but the real need is for practicing sociobiologists to arrive at a new consensus based on the many developments that have taken place during the last four decades.

Achieving a new consensus is simpler than it might seem, once we realize that researchers for the most part have always accepted multilevel selection as a theoretical framework. There was universal agreement that group-level adaptations require a process of group-level selection and are often opposed by within-group selection. It was only the additional claim that group selection is invariably weak that turned multilevel selection theory into the theory of individual selection. Early writers such as Williams and Hamilton themselves easily reverted back to multilevel selection when they became convinced that group selection might be a significant evolutionary force after all. It is time for the field as a whole to follow suit. The fact that all evolutionary theories of social behavior must assume the existence of multiple groups (defined by particular traits and analyzed consistently by the logic of multilevel selection) is a major conceptual simplification that should be welcomed rather than resisted.

When Rabbi Hillel was asked to explain the Torah in the time that he could stand on one foot, he famously replied “Do not do unto others that which is repugnant to you. Everything else is commentary.” Darwin’s original insight and the developments reviewed in this article enable us to offer the following one-foot summary of sociobiology’s new theoretical foundation: “Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary.”

A History of (Non)Violence: Why humans are becoming more peaceful.

STEVEN PINKER

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The annals of human violence include enough kinds of victims to fill a page of a rhyming dictionary: homicide, democide, genocide, ethnocide, politicide, regicide, infanticide, neonaticide, filicide, siblicide, gynocide, uxoricide, mariticide, and terrorism by suicide. Violence is found throughout the history and prehistory of our species and shows no signs of having been invented in one place and spread to the others.

At the same time, the quantitative study of history provides some pleasant surprises. Abominable customs such as human sacrifice, chattel slavery, and torture-executions for victimless crimes have been abolished. Homicide rates have plunged since the Middle Ages, and rates of battle death in armed conflict are at an all-time low. Whatever causes violence, it is not a perennial urge like hunger, sex, or the need to sleep. The historical decline of violence thereby allows us to dispatch a dichotomy that has stood in the way of understanding the roots of violence for millennia: whether humankind is basically bad or basically good, an ape or an angel, a hawk or a dove, the nasty brute of textbook Hobbes or the noble savage of textbook Rousseau. Left to their own devices, humans will not fall into a state of peaceful cooperation, but nor do they have a thirst for blood that must regularly be slaked. Human nature accommodates motives that impel us to violence, like predation, dominance, and vengeance, but also motives that -- under the right circumstances -- impel us toward peace, like compassion, fairness, self-control, and reason.

Contests for dominance, even when nothing tangible is at stake, are among the deadliest forms of human quarrel. At one end of the magnitude scale, many destructive wars have been fought over nebulous claims to national preeminence, including World War I. At the other end of the scale, the single largest motive for homicide on police blotters are "altercation of relatively trivial origin; insult, curse, jostling, etc."

There really is a commodity at stake in contests for dominance, namely information: a shared understanding of who will not back down. The socially constructed nature of dominance can help explain which individuals take risks to defend it. Perhaps the most extraordinary popular delusion about violence of the past quarter-century is that it is caused by low self-esteem. Self-esteem can be measured, and surveys show that it is the psychopaths, street toughs, bullies, abusive husbands, serial rapists, and hate-crime perpetrators who are off the scale. Psychopaths and other violent people are narcissistic: They think well of themselves not in proportion to their accomplishments but out of a congenital sense of entitlement. When reality intrudes, as it inevitably will, they treat the bad news as a personal affront, and its bearer, who is endangering their fragile reputation, as a malicious slanderer.

Violence-prone personality traits are even more consequential when they infect political rulers, because their hang-ups can affect hundreds of millions of people rather than just the unlucky few who live with them or cross their paths. Unimaginable amounts of suffering have been caused by tyrants who callously presided over the immiseration of their peoples or launched destructive wars of conquest. The *Diagnostic and Statistical Manual of Mental Disorders* (DSM) of the American Psychiatric Association defines narcissistic personality disorder as "a pervasive pattern of grandiosity, need for admiration, and a lack of empathy." The trio of symptoms at narcissism's core -- grandiosity, need for admiration, and lack of empathy -- fits tyrants to a T. It is most obvious in their vainglorious monuments, hagiographic iconography, and obsequious mass rallies. And with armies and police forces at their disposal, narcissistic rulers leave their mark in more than statuary; they can authorize vast outlays of violence. As with garden-variety bullies and toughs, the unearned self-regard of tyrants is eternally vulnerable to being popped, so any opposition to their rule is treated not as a criticism but as a heinous crime. At the same time, their lack of empathy imposes no brake on the punishment they mete out to real or imagined opponents. Nor does it allow any consideration of the human costs of another of their DSM symptoms: their "fantasies of unlimited success, power, brilliance, beauty, or ideal love," which may be realized in rapacious conquest, pharaonic construction projects, or utopian master plans.

Among the pacifying features of democracies is that their leadership-selection procedure penalizes an utter lack of empathy, and their checks and balances limit the damage that a grandiose leader can do. The drive for dominance isn't just found in narcissistic individuals, however. It can also be manifested in a narcissistic allegiance to a group, such as a gang, tribe, team, ethnic group, religion, or nation, and the drive for that group to be dominant over its rivals. A part of an individual's personal identity is melded with the identity of the groups that he or she affiliates with. Loyalty to groups in competition, such as sports teams or political parties, encourages us to play out our instinct for dominance vicariously. Jerry Seinfeld once remarked that today's athletes churn through the rosters of sports teams so rapidly that a fan can no longer support a group of players. He is reduced to rooting for their team logo and uniforms: "You are standing and cheering and yelling for your clothes to beat the clothes from another city." But stand and cheer we do: The mood of a sports fan rises and falls with the fortunes of his team.

Nationalism, Albert Einstein said, is "the measles of the human race." That isn't always true -- sometimes it's just a head cold -- but nationalism can get virulent when it is comorbid with the group equivalent of narcissism in the psychiatric sense, namely a big but fragile ego with an unearned claim to preeminence. Recall that narcissism can trigger violence when the narcissist is enraged by an insolent signal from reality. Combine narcissism with nationalism, and you get a deadly phenomenon of *ressentiment*: conviction that one's nation or civilization has a historical right to greatness despite its lowly status, which can only be explained by the malevolence of an internal or external foe.

Group-level ambition also determines the fate of ethnic neighbors. Experts on ethnicity dismiss the conventional wisdom that ancient hatreds inevitably keep neighboring peoples at each other's throats. After all, there are some 6,000 languages spoken on the planet, at least 600 of which have substantial numbers of speakers. By any reckoning, the number of deadly ethnic conflicts that actually break out is a tiny fraction of the number that could break out. Neighboring ethnic groups

may get on each other's nerves, but they don't necessarily kill each other. Nor should this be surprising. Even if ethnic groups are like people and constantly jockey for status, most of the time people don't come to blows either.

Political scientist Stephen Van Evera suggests that a major cause of ethnic conflict is ideology. Things get ugly when intermingled ethnic groups long for states of their own, hope to unite with their diasporas in other countries, keep long memories of harms committed by their neighbors' ancestors while being unrepentant for harms committed by their own, and live under inept governments that mythologize one group's glorious history while excluding others from the social contract.

Many peaceable countries today are in the process of redefining the nation-state by purging it of tribal psychology: India, Canada, New Zealand, South Africa, and the Netherlands spring to mind as examples. The government no longer defines itself as a crystallization of the yearning of the soul of a particular ethnic group, but as a compact that embraces all the people and groups that happen to find themselves on a contiguous plot of land. The machinery of government is often Rube Goldbergian, with complex arrangements of devolution, special status, power sharing, and affirmative action; and the contraption is held together by a few national symbols such as a rugby team. People root for clothing instead of blood and soil. It is a messiness appropriate to the messiness of people's divided selves.