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1999

Can we make a deal, John Hartung?

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Thompson, Nicholas S., "Can we make a deal, John Hartung?" (1999). *Faculty Works*. 89.

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made a few contributions to bookies over the years, but my knowledge base concerning dog breeds is much more extensive, both from reading and from rearing them (two Bull Terriers and a Great Dane).

I've long argued that dog breeds provide very strong evidence for the ability (indeed the ease) with which selection can produce both physical and behavioral within-species differences. Anyone who doubts this can disabuse themselves of their confusion by attempting to break into first a home defended by a Pekingese, and then one defended by a Pit Bull. For extreme environment-is-everything-when-it-comes-to-behavior types I suggest trying it with a Perro de Presa Canario, a fighting dog from the Canary Islands twice the size (150 versus 75 pounds) and muscle mass of a male Pit Bull. Indeed, Carl Semencic, perhaps the world's expert on fighting and guard dogs, rates the "Presa" the "ultimate man stopper." I've worked with these dogs and know that if I punched one as hard as I could, he'd only laugh at me before tearing me to shreds. (They can also run and jump like Olympic hurdlers so I couldn't get away either). More armchairs types might prefer to read Serpell (1995) or Walkowicz

and Wilcox (1994), which also points out the number of genetic diseases to which purebreeds are subject. That's why, despite registry organizations such as the AKC, I believe it's prudent to breed back to other breeds to maintain the right amount of genetic diversity.

As to Salter's second point, let's assume intelligence in humans has a substantial genetic component (for which the evidence is strong). Further assume that both the higher mean IQ of Ashkenazi Jews and their greater propensity to Tay-Sachs disease are at least partly genetic and, to some degree, the result of the eugenic practices described by Salter (more likely than not in my opinion). What to do? As Salter puts it, "Ashkenazi Jews would no doubt like to have their cognitive success without side effects, but what if that is not possible? Given the choice, how many Einsteins should be foregone in order to maintain a slightly healthier population?" My answer—that's for individuals and communities to decide. I believe government has a role to play in first allowing genetic screening and reproductive technology and even in providing counseling and methods such as birth control and abortion for those cannot otherwise afford them.

Skeptics have spent years pulling our

hair out trying to figure out why something as silly as religion has proven so persistent. The best answer is that it's adaptive. Viewing religions as "experiments in living" as MacDonald (1994) has with Judaism, David Sloan Wilson (1999) with Calvinism, and I (1999) have suggested for recently for Puritanism, rather than as mere mind viruses or refuges from critical thinking, will prove a more productive path for understanding not only religion but human evolution, including the costs and benefits of genetic diversity.

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GROUP SELECTION FORUM

THE GROUP SELECTION CHIMERA

JOHN HARTUNG

"It is necessary to affix right ideas to words."
—Thomas Paine, *The Age of Reason*, 1794

Sisyphus' boulder has rolled back down the hill. Legislators in Kansas have promoted Creationism and authors in SKEPTIC have promoted Group Selection (Sober and Wilson, Vol. 6, No. 4, 1998 and Thompson, Vol. 7, No. 2, 1999). But it stands to reason that the boulder and the hill get a little smaller with

each round trip—so let's keep trying.

Group Selection should be capitalized because, like Creationism, it is a term. It means natural selection of genes that decrease individual reproductive success but spread anyway because they increase the reproductive success of groups in which a sufficient number of individuals have such genes—and here "the reproductive success of groups" does not refer to the rate at which the size of groups increases per se...it means the rate at which groups spawn, fission or otherwise give rise to new, independently breeding groups.

Group Selection does not refer to the

group component of genes that increase individual reproductive success and also increase the success of the groups that contain such individuals. More explicitly, "A" genes in the following 2 x 4 crosstab lie at the heart of social evolution. They are the type of genes that can produce kin selection, trait-group selection and reciprocal altruism—the building blocks of social behavior.

Unfortunately, "B" genes also happen; for example, a gene that confers disease resistance while enhancing one's ability to be a disease carrier. And "D" genes happen a lot, but they do not evolve unless they cause meiotic drive—a rare phenomenon

that appears to occur in several plants. Otherwise, "D" genes only hang around at their mutation rates.

Gene	EFFECT OF GENE ON	
	Individual	group
A	+	+
B	+	-
C	-	+
D	-	-

The only possibility in the above table that is contested by evolutionary theorists is "C"—genes that would reduce the reproductive success of individuals within their breeding group but evolve because they enable groups that contain enough such individuals to produce new groups at a fast enough rate to displace groups that have too few such individuals. This is the only way that natural selection could produce what evolutionary biologists call genetic altruism.

This theoretical construct—selection powerful enough between groups to overcome reduced fitness within groups—was given a name about 40 years ago: Group Selection. It requires the postulation of extreme population dynamics, like zero or exceedingly low migration rates, small enough group sizes to reduce the cumulative probability of selfish mutations, and group generation rates that approach individual generation rates. Although asexual reproduction is not an absolute requirement, it helps give the possibility of Group Selection some greater-than-trivial theoretical probability for hypothetical organisms that meet the migration, size and fissioning criteria.

Does Group Selection happen? It might. I have long thought that the evolution of mitochondria—at least subsequent to their obligatory containment within eukaryotic cells—could be better understood in Group Selection terms. But as G.C. Williams and others have shown, when it comes to independent, long-lived, diploid, sexually reproducing organisms that form non-genetically isolated groups, Group Selection has virtu-

ally no chance of having contributed as much as a 1% increase in the frequency of any gene in any species that remotely resembles any vertebrate, ever.

So why is there a debate about Group Selection? Because a growing reservoir of people accept the reality of evolution by natural selection and simultaneously perceive themselves to be altruistic by nature (read 'genetically' altruistic), and they want these two notions to be compatible. And what do we have when a large group of people want some nonsense to be true? We have a market!

Such markets are usually taken advantage of by hucksters on late-night television, Men of the Cloth in the light of day, and politicians at all hours. But these types failed to penetrate the wish-it-were-so Group Selection market until Wilson and Sober, focusing on the plus sign in the upper right corner of the above crosstab, started referring to group effects as Group Selection. Then, having grabbed the attention of the most ardent wishers, they reinvented the wheel, called it a square, claimed that squares can roll, and gained the allegiance of the rest of their target audience.

To test the above charge, I submitted the following scenario to David Sloan Wilson via the original *Human Evolution & Behavior* e-mail group in March of 1996:

Please bear with me by imagining a population of hominidae who use spears but do not have the ability to throw them. Within the population there are two groups who live on opposite banks of a river. Every few generations, one group or the other cooperates in an attempt to cross the river and subjugate the other group, but each time the aggressing group founders at the water's edge.

Then a mutation arises that enables a male in one group to throw a spear and throw it well. After using this ability to win many confrontations, he becomes greatly feared/respected and he uses his advantage to gain many wives, have many offspring, etc. This trait confers a relative fitness advantage upon individuals and it spreads throughout the group.

Eventually this group of spear throwers embarks upon a cooperative effort to attack the group across the river. Armed with their new ability, they vanquish that group, take over their territory and resources, and as the generations proceed, descendant groups of spear throwers go on to vanquish all non-spear-throwing groups.

Did group selection occur here?

Of course it did, according to Wilson ...and his answer was correct according to the plain meaning of the words "group selection." But whether one is discussing Group Selection or Army Intelligence, it is wrong to include the plain meaning of words with the terminological meaning of words. As put by Thomas Paine, "it is necessary to affix right ideas to words."

Unfortunately, by mixing plain and terminological meanings, by conflating group selection and Group Selection, Wilson and Sober did something more pernicious than those legislators in Kansas who took evolution out of the curriculum. They put "Full of Natural Goodness" stickers over the warning label that belongs on every package of human beings. By confounding the most important insight that can be extracted from understanding natural selection, they have impeded the contribution that understanding evolution can make to understanding human nature—and so diminished the prospect of preventing World War III.

And now, fully intending to enhance the probability of preventing WWII, Nick Thompson has substantiated Cervantes' realization that "The road to hell is paved with good intentions" by promulgating the terminological confusion initiated by Wilson and Sober. Thompson put forth a set of not-quite-parlor-tricks to argue that "natural selection between groups could promote a kind of cooperative behavior in which my cooperative behavior enhances my fitness some, but enhances the fitness of other group members more" (SKEPTIC Vol. 7, no. 2, 1999).

Right, natural selection between groups could do that, but that would not be Group

Selection. Again, the term only refers to selection of genes that reduce individual fitness—not genes that increase individual fitness less than they increase the fitness of some other group members. And if you find yourself wondering whether this is just what Hartung thinks the term means, ask yourself how there could be a controversy over the proposition that selection could favor a gene that benefits carriers less than it benefits many non-carrying members of the same group.

Intelligence would be a useful trait to think about in this regard. For example, consider the Japanese Macaque who invented potato washing. Very bright idea! Get the sand off, save your teeth, eat longer, live longer, have more offspring. But who copied this brilliant move? Everybody! And the biggest, dumbest dope to finally get it may have been a male who held alpha status longer because of the enhanced longevity of his teeth—which enabled him to produce far more offspring than the brilliant female who made the invention. This kind of scenario is probably the reason that human intelligence, as measured by IQ, has such high variability and heritability—because it has not been closely tied to reproductive success.

In contrast, think about digit number (for most of us, having ten fingers), which has low variability and no heritability because it has been closely tied to reproductive success. And then think about George Williams. He did not make the most important single contribution to our understanding of natural selection by railing against the evolution of type A genes in which the group component is larger than the individual component. He simply crunched the numbers on Group Selection and forced the conclusion that “Mother Nature is a wicked old witch.”

Nick Thompson is right about “The Origins of Evil,” but his argument does not need, does not entail, and could not survive the logic of Group Selection. As we start rolling the boulder back up the hill, let’s remember three reasons why we need to keep pushing:

1. Because Group Selection has not

shaped human nature.

2. Because there is no god.

3. Because there will not be a World War IV.

In order to exist (as I argued in *SKEPTIC* Vol. 4, No. 1, 1996), we must pave the road to eternity with concrete reality.

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SOCIETY AS ORGANISM

A GROUP SELECTION PRIMER
AND REPLY TO HARTUNG

DAVID SLOAN WILSON
AND ELLIOTT SOBER

Readers whose knowledge of group selection is confined to the pages of *SKEPTIC* must be amazed at the bits of information and misinformation, flying like shrapnel amidst insults and allusions to World War III. The greatest service we can perform is to summarize the theory and its history before responding to Hartung’s blitz. A more detailed account can be found in our book *Unto Others: The Evolution and Psychology of Unselfish Behavior* (Harvard University Press 1998). In short:

1. Human social groups have been described in organismic terms throughout history. For example, Joseph Butler stated in 1726 that “it is as manifest that we were made for society and to promote the happiness of it, as that we were intended to take care of our own life and health and private good.”

2. Evolutionary theory reveals what can be called the fundamental problem of social life: behaviors that would cause groups to function adaptively do not always increase the fitness of the individuals performing the behaviors, compared to other less prosocial members of the same group. The classic example is altruism, defined by evolutionists as any behavior that increases the fitness of others at the expense of one’s own fitness.

3. Darwin was familiar with the fundamental problem of social life and proposed a solution. Even though selfishness trumps altruism within single groups, groups of

altruists trump groups of selfish individuals. Thus, altruism and other prosocial behaviors can evolve by a process of group selection, even though these same behaviors are selectively disadvantageous within groups.

4. Darwin’s solution is elegantly simple. Adaptations evolve by natural selection, so adaptive groups evolve by group selection. More generally, adaptation at any level of the biological hierarchy requires a corresponding process of natural selection at the same level. This summary statement should be committed to memory by everyone interested in evolution.

5. Unfortunately, many biologists were not as discerning as Darwin and assumed that behaviors evolve for the good of groups, species, or even ecosystems as easily as for the good of the individual. Today these people are known as “naïve group selectionists.”

6. Group selection came under serious scientific scrutiny in the 1960s. A consensus formed that group selection is theoretically possible but is such a weak force in nature that it can be ignored. The rejection of group selection was celebrated as a scientific advance comparable to the rejection of Lamarckism. Kin selection, evolutionary game theory, and selfish gene theory were developed as alternatives to group selection that explain apparently altruistic behaviors in individualistic terms.

7. The rejection of group selection acquired a sociological dimension, becoming a badge of membership in the evolutionary community. In his book *Survival Strategies: Cooperation and Conflict in Animal Societies* (Harvard University Press 1997, p.38), R. Gadagkar wrote “In mid-1960s and the 1970s, the phrase ‘group selection’ became a term of opprobrium. I have sat in many seminars where a question from a member of the audience was loudly dismissed by other members of the audience shouting ‘but that’s group selection!’ even before the speaker had a chance to understand the question.”

8. Despite this hostile intellectual climate, some scientists continued to take group selection seriously and for them the seeds of a

robust theory began to grow as early as the 1970s. We think of the current situation as like a small bubble expanding within a larger bubble. The small bubble is a community of scientists for whom group selection is no more controversial, than, say, sexual selection. The larger bubble is a community of scientists for whom group selection is simply off limits. Outer bubble discussions of group selection often cite nothing more recent than G.C. Williams' *Adaptation and Natural Selection* (Princeton University Press, 1966), now over 30 years old, ignoring dozens of more recent inner bubble papers published in the most prestigious scientific journals.

9. The "new" group selection is not really new but has a seamless relationship with the past. At the core of every group selection model is the fundamental problem of social life and Darwin's solution: selfishness trumps altruism within groups, but altruistic groups trump selfish groups.

10. One important development has been the discovery that the supposed alternatives to group selection are nothing of the sort. Almost all social interactions take place in groups that are small compared to the total population. Kin selection, evolutionary game theory, and selfish gene theory cannot ignore these groupings and therefore must incorporate them into their own frameworks. Once the groups are identified, it is easy to show that the "apparently" altruistic and cooperative behaviors are selectively disadvantageous within groups and evolve only by a process of between-group selection—Darwin's solution to the fundamental problem of social life is general. In another intellectual climate this discovery would be regarded as an important unification of ideas, but members of the outer bubble cannot bear to contemplate the ironic possibility that group selection not only exists, but also includes their own cherished theories as special cases.

11. Another important development has been the discovery that individual organisms are themselves higher-level adaptive units. Evolution takes place not only by small mutational steps but also by coalescing events in

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which social groups become so functionally integrated that they become the new organism; multicellular organisms from single cells, nucleated cells from bacteria, all the way down to the origin of life as a social group of interacting molecules. Never again can it be said that higher-level selection is always weaker than lower-level selection (see R. Michod, *Darwinian Dynamics*, Princeton

University Press 1999).

12. Group selection was probably an especially potent force in human evolution for reasons that have more to do with morality than genetic relatedness. By defining and enforcing social norms, moral systems create a degree of behavioral uniformity within groups and differences among groups that is highly conducive to

group selection. Morality and religion (to the degree that it reflects morality) are at the center of human evolution (see *Unto Others* and C. Boehm, *Hierarchy in the Forest*, Harvard University Press 1999).

13. Altruism is only part of the group selection story. Genes can evolve in three ways in a group structured population: by outcompeting other genes within the same individual, by causing the individual to outcompete other individuals within the same group, or by causing the group to outcompete other groups. All of these are relative fitness comparisons, since relative fitness is all that matters as far as evolution is concerned. Group selection occurs when genes evolve by virtue of their effect on groups, relative to other groups. Highly self-sacrificial altruistic traits can evolve by group selection, despite their selective disadvantage within groups, but many other traits evolve by group selection that do not look altruistic to us. Indeed, just as the appearance of altruism can evolve by within-group selection (a point stressed by Hartung), the appearance of selfishness can evolve by between-group selection. Only by carefully comparing fitness differences at each level of the biological hierarchy can we identify the level of selection responsible for the evolution of a trait.

14. There is a dark side to group selection. The most that group selection can do is transform social groups into adaptive units that act with the purpose and coordination of a single organism. We already know the mayhem wrought among single organisms and no less can be expected of organismic groups. Group selection does not eliminate conflict so much as elevate it up the biological hierarchy, where it can potentially do more damage than ever before. The dark side of group selection has been recognized since Darwin, who imagined morally "well-endowed" groups replacing other groups—by warfare! Anyone with a sophisticated knowledge of group selection knows that it does not support a naively romantic view of human nature.

15. Group selection partially revives the organismic view of human society, which has

deep roots in the social sciences. Durkheim and others of his time initiated a tradition known as functionalism, which explained human society and culture in organismic terms. Functionalism was largely rejected in the social sciences at about the same time that group selection was rejected in biology, to be replaced by a more individualistic perspective. Naïve functionalism, like naïve group selectionism, deserves to remain buried but unrelenting individualism in the social sciences must give way to a multilevel perspective, as it has in biology.

Against the background of this summary, we hope we will be forgiven for not taking Hartung's tirade against group selection very seriously. He displays no knowledge of the modern literature and seems to think that George Williams had the final word in the 1960s. Even his knowledge of what took place in the 1960s can be questioned. The following quote from *Adaptation and Natural Selection* (p. 92) shows that not only Williams but everyone before him defined group selection in terms of relative, not absolute fitness: "It is universally conceded by those who have seriously concerned themselves with this problem that group-related adaptations must be attributed to the natural selection of alternative groups of individuals and that the natural selection of alternative alleles within populations will be opposed to this development. I am in entire agreement with the reasoning behind this conclusion. Only by a theory of between-group selection could we achieve a scientific explanation of group-related adaptations."

Based on our reading and conversations across many disciplines, we are impressed by how many people with a group-level perspective on some aspects of human affairs approach the evolutionary literature, only to encounter a brick wall. With utmost authority they are told that there can be no group-level perspective and that they must learn to think about their subject another way. That wall now has a door and we invite everyone to use it, despite the rude and ignorant man at its entrance.

CAN WE MAKE A DEAL, JOHN HARTUNG?

NICHOLAS S. THOMPSON RESPONDS

Innuendo *ad hominem* has no place in a discussion as important as one that concerns the evolutionary roots of human nature. I hope that SKEPTIC readers will disregard Hartung when he implies that his opponents are misguided do-gooders trying to put "... Full of Natural Goodness" stickers over the warning label that belongs on every package of human beings," or are in some way allied with "... hucksters on late night television, Men Of The Cloth in the light of day." I trust that they will also disregard his attempt to link group selection with Creationism by using the two, side-by-side, in a lame hypothetical—not only because such innuendos are misleading, but because they are irrelevant. Arguments either make sense or they don't; they either square with the facts or they don't. Ill-informed speculations on the motives or associations of the argument-maker are a waste of time and an insult to the intelligence of the reader.

Nevertheless, when all the rhetorical rubbish is cleared away, Hartung's response makes substantive points that must be addressed. As I made clear in my earlier critique, I agree with many of his views. Hartung and I could not be arguing if we did not agree in many important ways. We agree, for instance, that knowing the evolutionary origins of human evil may help us control it. And we agree that even in the absence of kinselection or reciprocity, selection can favor organisms that do more for other group members than they do for themselves. However, we disagree on at least two issues.

1. Should we employ the term Group Selected to refer to traits that cause an organism to give away more to a fellow group member than it receives from them, irrespective of their kinship or a history of previous cooperation, if those traits increase the fitness of the group? Hartung says no, I say yes. Hartung says we should reserve the term for cases in which the trait actually lowers the fit-

ness of the trait-bearer below the mean fitness of the overall population. I say we should be free to use it whenever differential productivity of groups is contributing to the overall fitness of the character. In the present document, Hartung gives no reason for his views, but I suspect that his reluctance to see as group selected any trait that enhances the fitness of the trait-bearer to any degree has to do with his association of group selection with the concept of altruism.

My own view is that the concept of altruism has done so much mischief in evolutionary discussions that we would best be rid of it. But let's for a moment take seriously the question of whether an animal that helps others in its group a lot while helping itself a little should be thought an evolutionary altruist. Imagine a creature that gives an alarm call that warns others in its group. Imagine that we do a detailed study of the productivity of individuals that call by comparison with individuals that do not call and the productivity of groups that have callers compared to groups that do not have callers. We discover that groups that have callers are much more productive than groups that have no callers; but also imagine that we find that within groups, callers are less productive than non callers, since callers take time from feeding to be vigilant. Despite this disadvantage within groups, we sum across all groups and discover that because of the greater productivity of groups with the greater numbers of callers, callers are more fit than non callers overall.

Well, if we ever had the whole population in view, we might be justified in asserting that callers are selfish because, overall, callers have an edge over noncallers. But field biologists do not normally have an entire population in view. The phenomena that raise the entire question of altruism are observations that group members are doing things that place them at a competitive disadvantage to other group members that are related neither by genealogy nor by reciprocity. We might call such behavior, "local altruism." Is local altruism really altruism? Anyone who is prepared to say that local altruism is not altruism must

be prepared to deny altruism to a species in which trait bearers in every social group of the species place themselves at a reproductive disadvantage to non-trait-bearing members of the same group. Such a terminological practice seems counterintuitive to me, but I am happy to abide by it.

But an agreement concerning whether to call "local altruism" "real," does not commit us to any particular belief concerning the origin of the forces that bring local altruism into being. The fact is that "local altruism" will only come about if groups with more local altruists are more productive than groups with fewer local altruists. That is, even local altruism requires group selection.

2. "Is it wishful thinking to suppose that group selection has played a role in human evolution?" Hartung would say "yes" because he thinks that selfishness is the principle source of human evil and, Hobbesian that he is, he does not think there is much good in humans. Hartung anticipates that group selectionists will disagree, because we believe in the possibility of human good and need group selection to explain it. He is right about my disagreement, but wrong about my reasons. I think calling humans 'groupish' is not wishful thinking because I would not wish for many of its consequences. In fact, I think that groupishness is a powerful source of human evil. Notice that Hartung and I both share a do-gooder impulse to prevent human ills by being realistic about human nature. Notice also, that both of us believe that humans are, on the whole, a rotten lot. We even agree that one of us is beguiled by some sort of romanticism and the other is being toughly realistic. The only disagreement is that he thinks that I am beguiled by a collectivist romanticism in the face of his toughly realistic individualism, and I think he is beguiled by an individualist romanticism in the face of my toughly realistic collectivism. In fact, I regard his idea that only individual selection has contributed to human nature as dangerously balmy.

My toughly realistic position is that just because human nature is in part the result of group selection, we have to be worried about

our future as a species. Alas, if only it were true that humans were guided by rational self interest! Imagine yourself accosted on a dark street by a group of young thugs. If you presumed they were rational, how simple your problem would be. You would do a quick calculation as to whether you preferred to give them your money or have them lift it off your bleeding corpse. Having decided on the latter course, you would then say, quietly, "So, gentlemen, what can I do for you?" They, for their part, would have no interest in violence. Violence would not increase their take from the robbery and might very well increase the risk of being prosecuted and the time they might spend in jail. The robbers would take the money, divide it amongst themselves according to their dominance, and off they would go. What's to fear but the loss of a few dollars?

But you will have much more to fear if you share my belief that group selection has endowed these young men with two more characteristics that make them very dangerous in groups: they are particularly prone to being moved to action by abstractions, and they are particularly careless of their personal safety. Far from a rational desire for spending money, those young men may be motivated by an irrational desire to clear the street of "your" kind or, more simply, by the warm rush of togetherness produced by a good group killing. Unlike Hartung, when I am thinking of the products of group selection, I am not thinking of the Martin Luther Kings, the Mother Teresas or the Pete Seegers of the world, rather I am thinking of the soldiers of the Mafia, the death squads of Latin America, the street gangs of Los Angeles, and the militia groups of Indonesia and the Balkans. In fact, if you ask me what is the purest expression of group selection in human affairs, I would say it is the lynch mob.

Perhaps Hartung and I could agree on a compromise. I will join him in his belief that there is no such thing as altruism (accepting his assertion that local altruism is not real altruism), if he will join me in my belief that group selection has been a potent force for evil in the evolution of human nature.