Max M. Krasnow & Andrew W. Delton

Is there evidence for special design of a group-selected psychology? Comment on Steven Pinker's The false allure of group selection.

http://edge.org/conversation/the-false-allure-of-group-selection#mkad

From the raiding parties of the Turkana to the gangs of West Side Story, group cooperation—and violent group conflict—interpenetrate human life and fiction. What is the origin of human group behavior? Steve Pinker's essay is an account of the serious problems associated with one explanation: group selection. We would like to amplify one of Pinker's points about the dearth of empirical evidence for group selection, and address several related issues that appear perniciously difficult to communicate.

Most organisms live in a world filled with photons and these photons have bounced off nearby surfaces, including the surfaces of mates, food, friends, foes, or predators. An animal that could use these photons to reconstruct the world around it would be at a marked advantage. The utility of seeing (and physical laws that organize photons etc.) are what evolutionary biologists call a selection pressure—a feature of the world that, if properly exploited, can cause faster biological replication. The eye and the visual system are what evolutionary biologists call an adaptation—an improbably well-organized feature of an organism that actually does exploit a selection pressure and that came into being through natural selection because of that selection pressure. Understanding human nature requires mapping the nature of human psychological adaptations.

What are the adaptations that compose the mind? The eye/visual system is surely one (or an integrated set, if you're a splitter instead of a lumper). One aspect of the present debate—and the focus of Pinker's essay—turns on the question: Are there psychological adaptations that evolved due to group selection? Note that this is an entirely different question than whether group selection is a logically possible selection pressure. To this latter question, decades of modeling have given a definitive yes. But as Pinker argues, and in our view as well, there are no data that demonstrate the existence of group selected adaptations in humans. To do this, one would need evidence of special design—evidence that a feature of an organism was exquisitely and improbably well-crafted for generating benefits for the group as a whole, independent of how it might affect the individual.

This search for evidence of special design is critically lacking in the arguments of proponents of group selection. Often—as in many of the pro-group selection responses to Pinker's essay—facts such as that humans are a social species, prone to group living and social learning, and capable of high levels of coordinated action for cooperation and aggression are taken as prima facie evidence for group selection. But as Pinker makes clear, all of these behaviors could plausibly emerge from a psychology designed by forces other than group selection. This is important enough to say twice: social or group-oriented features of human nature, such as moral intuitions of fairness, valuing group loyalty, etc., could emerge in principle from selection acting at any level of organization, not merely the group-level [1-3].As such, the mere existence of such features (the vast majority of evidence generally marshaled in this debate) cannot possibly arbitrate between competing theories. The only evidence capable of doing so is evidence of special design.

For instance, we have shown mathematically how generosity in one-shot, anonymous encounters arises from individual selection for direct reciprocity, once realistic constraints on what an organism can know are taken into account [4].Thus, the mere existence of experimental evidence of

cooperation in one-shot, anonymous encounters cannot count as evidence in favor of group selection. Further, we have shown with behavioral experiments that one-shot generosity is in fact conditioned on how valuable the participant perceives the partner to be as a potential cooperative partner [5]. Thus, at least this aspect of human generosity appears designed for individual rather than group benefit.

The debate is not about selfishness versus generosity or individualism versus groupishness. The debate is about whether generosity, cooperation, altruism, etc. are instantiated by a psychology designed by individual or group selection. If the former, then this psychology should have design features that, on average and under conditions that match ancestral conditions, eventually lead to net benefits for the individuals or their kin. If the latter, then this psychology should have design features that, on average, lead to group benefits even if the individual suffers.

When the evidence is examined for indications of special design in this way, the verdict for group selection is decisively negative. Yes, people will sometimes give money to others even in artificial, controlled situations where such generosity cannot be repaid. But they do so contingent on cues that their actions are observed by others [6,7],that their interactions may possibly continue [4],that the other has a reputation for good behavior [5],and upon other cues that cooperation will probabilistically return a benefit [8];this reveals the design of a mechanism crafted to generate individual returns from cooperative relationships, not group-wide benefits from inter-group competition. Yes, people will sometimes punish others' bad behavior at a personal cost even in artificial, controlled situations where such action cannot beneficially redound on the punisher (either preferentially or at all). But they do this contingent on cues that they could benefit by recruiting those other's good behavior [5,9],and upon cues of the possibility of improving their standing in the eyes of others [10];again, this reveals a design tailored for individual, not group-wide, returns. Yes, people recognize large, symbolically marked ethnic groups extending over many miles and thousands of individuals. But symbolically marking a group is not limited to large ones—and if you disagree perhaps the Sharks or the Jets would have a word with you. Yes, cooperative practices differ from culture to culture, but in ways that sensibly mesh with ecological variation that drives individual returns from cooperation [11,12].

In short, group selection (or as some prefer, multilevel selection) may be a completely coherent model that may suggest selection pressures that have acted to shape human nature. The problem for theories of group selected adaptations is that the preponderance of the evidence suggests that it simply hasn't done so.

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References

1. Petersen MB, Sznycer D, Cosmides L, Tooby J (2012) Who Deserves Help? Evolutionary Psychology, Social Emotions, and Public Opinion about Welfare. Political Psychology 33: 395-418.

2. Petersen MB, Sell A, Tooby J, Cosmides L (2012) To Punish or Repair? Evolutionary Psychology and Lay Intuitions about Modern Criminal Justice. Evolution and Human Behavior.

3. Boyer P, Petersen MB (2012) The Naturalness of (Many) Social Institutions: Evolved Cognition as Their Foundation. Journal of Institutional Economics 8: 1-25.

4. Delton AW, Krasnow MM, Cosmides L, Tooby J (2011) The evolution of direct reciprocity under uncertainty can explain human generosity in one-shot encounters. Proceedings of the National Academy of Sciences of the United States of America.

5. Krasnow MM, Cosmides L, Pedersen EJ, Tooby J (under review) What are reputation and punishment for?

6. Hoffman E, McCabe K, Shachat K, Smith V (1994) Preferences, property rights, and anonymity in bargaining games. Games and Economic Behavior 7: 346-380.

7. Haley KJ, Fessler DMT (2005) Nobody's watching? Subtle cues affect generosity in an anonymous economic game. Evolution and Human Behavior 26: 245-256.

8. Yamagishi T, Kiyonari T (2000) The group as the container of generalized reciprocity. Social Psychology Quarterly 63: 116-132.

9. Carpenter JP, Matthews PH (2012) Norm enforcement: anger, indignation, or reciprocity? Journal of the European Economic Association 10: 555-572.

10. Kurzban R, DeScioli P, O'Brien E (2007) Audience effects on moralistic punishment. Evolution and Human Behavior 28: 75-84.

11. Delton AW, Krasnow MM, Cosmides L, Tooby J (2010) Evolution of fairness: Rereading the data. Science 329: 389.

12. Lamba S, Mace R (2011) Demography and ecology drive variation in cooperation across human populations. Proceedings of the National Academy of Sciences 108: 14426-14430.