

Randolph M. Nesse (2016). Social selection is a powerful explanation for prosociality. *Behavioral and Brain Sciences*, 39, e47
doi:10.1017/S0140525X15000308

Social selection is a powerful explanation for prosociality

doi:10.1017/S0140525X15000308, e47

Randolph M. Nesse

Center for Evolution and Medicine, Arizona State University, Tempe, AZ 85287-4501.

nesse@asu.edu

<http://RandolphNesse.com>

Abstract: Cultural group selection helps explain human cooperation, but social selection offers a complementary, more powerful explanation. Just as sexual selection shapes extreme traits that increase matings, social selection shapes extreme traits that make individuals preferred social partners. Self-interested partner choices create strong and possibly runaway selection for prosocial traits, without requiring group selection, kin selection, or reciprocity.

Cultural group selection (CGS) does indeed, as the target article argues, play an important role in explaining human cooperation. However, social selection offers a powerful explanation of extreme human prosociality that contradicts Richerson et al.'s second thesis that only CGS "can easily account for the institutionalized cooperation that characterizes human societies" (sect. 7, para. 2).

The authors document transmissible substantial variations between cultural groups that account for the growth and persistence of some human groups at the expense of other groups. Examples from religious groups confirm the theory. The Shakers had 6,000 members in the mid-19th century but the norm of celibacy shrank the group by outmigration and lack of reproduction, so only one small community remains. In contrast, the Catholic Church's prohibition of birth control fosters group growth.

CGS not only occurs, but also it can act on between-group variations in cooperativeness to help explain human prosociality. Groups with norms enforcing cooperation tend to expand and

displace other groups, although, as the target article notes, complexities arise because of the costs of cooperating, the costs of punishing defectors, and movement of individuals and norms between groups. Nonetheless, CGS offers a plausible explanation for cooperation within groups, and tendencies for conflict between groups. Once established, cultural norms for in-group cooperation create forces of natural selection that give advantages to individuals with tendencies to learn and conform to those norms, as well as to their groups, in a recursive cycle that gives rise to capacities for complex culture.

CGS is not, however, the only plausible explanation for extreme human prosociality, and it does little to explain how the process gets going. Social selection can explain extreme human prosocial traits that CGS cannot. This is not Herbert Simon's social selection or that of Joan Roughgarden; it is the idea, first explored in depth in a pair of papers by Mary Jane West-Eberhard, that describe how self-interested social choices create strong selection forces that may account for extreme prosociality and other traits that are otherwise difficult to explain (West-Eberhard 1979; 1983; cf. Nesse 2009). She defines social selection in relation to its exemplar and subtype, sexual selection:

Sexual selection refers to the subset of social competition in which the resource at stake is mates. And social selection is differential reproductive success (ultimately, differential gene replication) due to differential success in social competition, whatever the resource at stake. (West-Eberhard 1979, p. 158)

Peahen preferences for peacocks with flamboyant tails give a fitness advantage to males with extreme traits, and to females who prefer males with extreme traits. Positive feedback between selection for the trait and the preference increases the prevalence of alleles that increase mating success until the fitness costs to health and survival outweigh their mating benefits.

West-Eberhard's core insight was that social selection occurs for competition over resources other than matings. A recent review noted, "It would have made as much sense for Darwin (and everybody since) to distinguish between selection by choice versus competition rather than on sexual versus non-sexual selection" (Lyon & Montgomerie 2012, p. 5). Social selection for competition opens up a whole world of important explanations, but partner choice is more important for explaining cooperation. Despite formal models (Frank 2006; Tanaka 1996; Wolf et al. 1999) and detailed descriptions with examples from many species (Flinn & Alexander 2007; Lyon & Montgomerie 2012; Tobias et al. 2012), social selection has been neglected as an explanation for human prosociality.

As many have noted, most social exchanges are mutualisms or are readily explained by kin selection or reciprocity. However, some extreme human prosocial traits still need explanation. CGS has a hard time explaining the pervasiveness and intensity of guilt, motivations for reparations, extreme sensitivity to what others think, concern for other's welfare, pity, commitment, empathy, philanthropy, and pride in generosity. Such traits are, however, expected outcomes from social selection that gives advantages to those preferred as relationship partners or group members.

People prefer partners and group members who have plentiful resources that they generously and reliably share (albeit selectively) with their partners. Thus, to be preferred as a partner requires striving to get resources and a reputation for sharing them. The fitness benefits are not as direct as increased matings, but they are more pervasive. Day by day, reputations and relationships grow and fade as the result of actions small and large. The most desirable relationship partners pair with each other, and this selective association gives them a selective advantage. As West and colleagues note in a critique of trait group selection models, "An alternative is to state as simply as possible what they are—models of nonrandom assortment of altruistic genes" (West et al. 2007, p. 11).

The benefits experienced by prosocial individuals, and the benefits of preferring such individuals as partners or group members, shape social traits as extreme and costly as a peacock's tail. This requires no kin selection, reciprocity, group selection, or CGS, although all of those phenomena are also involved in selecting for prosocial traits.

Social selection has been modeled in economic terms as partner choice that shapes advertisements for generosity (Noë et al. 2001) that can become more honest and costly than intended. However, effort invested in carefully assessing partners and making oneself a preferred partner is only the start. Models describing whether to stay or walk away from an existing relationship illustrate how walking away can be inexpensive or even beneficial for the punisher but devastating to the person punished, efficiently enforcing social norms (Aktipis 2004). Shunning and solitary confinement are cruel for good evolutionary reasons.

Careful selection of partners and group members offers little advantage in a species unless differentiated relationships offer a net advantage, some more than others. After a tipping point was reached, however, investments in careful partner choice and traits that make one a preferred partner could coevolve in a possibly runaway process that may have been crucial in making culture possible (Nesse 2010). Social selection may explain how self-interested social choices could have created selection forces by which humans domesticated themselves.

Is cultural group selection enough?

doi:10.1017/S0140525X15000205, e48

Dwight Read

Department of Anthropology and Department of Statistics, University of California, Los Angeles, Los Angeles, CA 90095.

dread@anthro.ucla.edu

https://ucla.academia.edu/DwightRead

Abstract: Richerson et al. propose cultural group selection (CGS) as the basis for understanding the evolution of cultural systems. Their proposal does not take into account the nature of cultural idea systems as being constituted at an organizational, rather than an individual level. The sealing partners of the Netsilik Inuit exemplify the problem with their account.

Though recognizing that cultural group selection (CGS) “is not a complete theory of the evolution of cultural variation” (sect. 2.1, para. 5), Richerson et al. consider CGS to be a major player and list four of its prerequisites. All of these are accepted by most anthropologists and sociologists because cultural systems, including norms and institutions, are extended across generations through enculturation, and culture has long been considered to constitute an “extrasomatic adaptation” (White 1959, p. 9), with functional differences the basis for the outcome of competition between groups (see, e.g., Evans-Pritchard's [1940] account of the conflict between the Nuer and the Dinka).

Similarly, the authors' “necessary but not sufficient test of the CGS hypothesis,” namely, that “social systems of human societies follow a phylogenetic pattern” (sect. 3.2, para. 1) is easily passed by cultural and social systems. For example, the historical pattern for the appearance and spread of kinship terminologies as part of the colonization of the Pacific Oceanic Islands, first by Melanesians and then by Polynesians, can be presented as a phylogeny organized around structural differences in the terminologies (Read 2013; see Fig. 1 here). However, these differences do not emerge from changes at the behavioral level assumed by their model of cultural evolution, but are organizational changes. Kinship terminologies, with their algebraic-like structure (Leaf & Read 2012; Read 1984; 2012; Read et al. 2014) are symbolic, computational systems with an underlying, generative logic and no more emergent from behavior than is arithmetic (*contra*

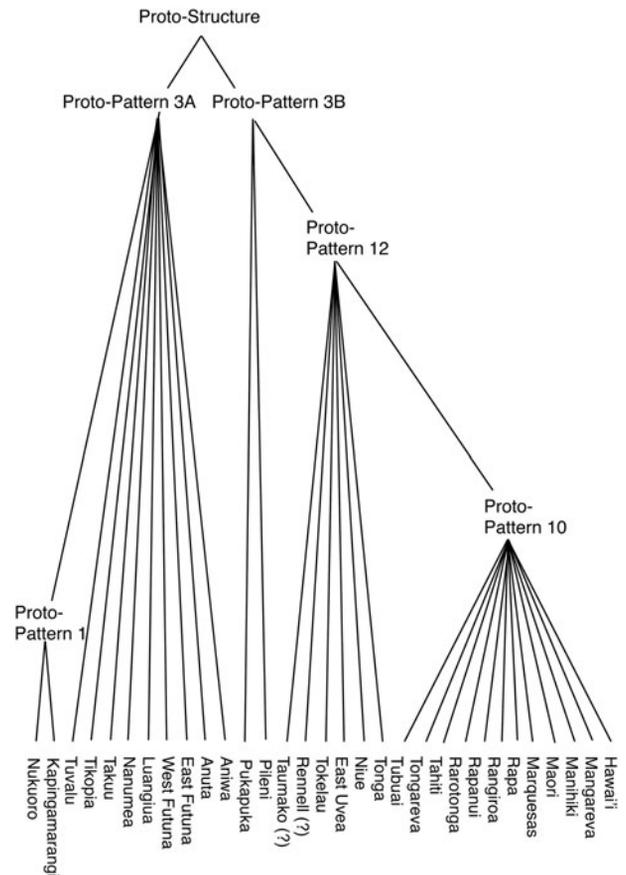


Figure 1 (Read). Phylogeny for Polynesian societies based on the reconstructed sequence of changes in the structural patterns for the sibling kin terms from a sample of the Polynesian kinship terminologies. The specific patterns, based on attributes associated with the sibling kin terms, are discussed in Read (2013). The left-to-right positions of the branch points in the phylogeny correspond to the relative time-sequence of the colonization of the islands corresponding to the societies listed on the right side of the figure (see Figure 7 in Read [2013] for a map showing the colonization sequence). (Reproduced from Read 2013, Figure 9, with permission of the publisher.)

Smaldino 2014) – hence, their evolutionary change is at the global level of organization and not the population level of individual traits (see Lane et al. 2009).

CGS shares with biological group selection the same problem of porous boundaries. If homogenization of between-group traits occurs on a time scale shorter than that needed for the consequences of between-group competition to materialize, then group competition will be obviated. Biological group competition “solves” the porous boundary problem through coupling selection for traits that maintain non-porous boundaries with biological group competition. In extreme form, this leads to the formation of biological species. The functional equivalent for CGS would be a group-level, cultural system with boundaries resistant to the introduction of competing cultural traits.

Consider the cultural adaptation of the Netsilik Inuit of Hudson Bay to Arctic conditions (Balicki 1970). Their adaptation included a culturally prescribed system of sealing partners central to procuring and sharing seal meat in the winter months. The system of sealing partners was but one of several functionally integrated cultural idea systems (see Leaf & Read 2012) that regulated, among other things, female infanticide, post-marital residence, and preferential cousin marriage. Jointly, these idea systems framed the behavioral patterns and modes of social organization