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How evolved psychological mechanisms empower cultural group selection

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ABSTRACT 60-word

Driven by intergroup competition, social norms, beliefs and practices can evolve in ways that more effectively tap into a wide variety of evolved psychological mechanisms to foster group-beneficial behavior. The more powerful such evolved mechanisms are, the more effectively culture can potentially harness and manipulate them to generate greater phenotypic variation across groups, thereby fueling cultural group selection.

Many authors incorrectly believe that evolutionary mechanisms regulating reciprocity, reputation, life history and behavior toward kin necessarily represent alternatives to cultural group selection as explanations for cooperative behavior, and that evidence *for* these mechanisms constitutes evidence *against* a role for cultural group selection (e.g., Lamba & Mace, 2011; Pinker, 2012). To the contrary, intergroup competition will favor those group-beneficial cultural traits—including social norms, beliefs and practices—that most effectively infiltrate and exploit aspects of our evolved psychology (N. Henrich & Henrich, 2007; Richerson & Boyd, 1999). Rituals, religious beliefs, marriage norms and kinship systems all tap into how the mind works in different ways, and if these traits vary in ways that influence the success of groups in competition, then cultural group selection will shape human social behavior. The following examples illustrate this point.

The kinship systems that dominate life in small-scale societies variously harness, extend and suppress evolved psychological mechanisms for dealing with relatives (Mathew, Boyd, & van Veelen, 2013). By building on the intuitions and motivations supplied by our evolved kin psychology, cultural evolution can, for example, spread social norms for treating distant cousins more like genetic siblings, thereby fostering greater cooperation while inhibiting sex and marriage. Such kinship norms often exploit our proximate kin identification mechanisms by influencing patterns of residence and daily routines (who eats together), and labelling (calling some cousins "brothers"). Incest taboos can activate a proximate mechanism for innate incest aversion by prescribing the co-rearing of cousins in the same extended household. Moreover, third parties readily acquire such norms because they already have compatible intuitions about how others "should" behave toward their siblings (J. Henrich, forthcoming).

Widespread unilineal clan organizations are particularly interesting. Though clearly rooted in kin psychology, they devalue half of one's genealogical relatives in order to foster greater cooperation with the other half. Among foragers in Indonesia, field studies show that patriclan membership predicts large-scale cooperation in whale hunting *better than* genealogical kinship (Alvard, 2011). In Australia, ethno-historical and linguistic reconstructions suggest that patrilineal clan organizations spread only in the last 6,000 years, probably via various forms of intergroup competition (Evans & McConvell, 1998; J. Henrich, forthcoming).

Cultural evolution may also empower direct reciprocity (N. Henrich & Henrich, 2007). Theoretical work (Boyd & Lorderbaum, 1987) reveals that the success of reciprocating strategies depends on the particular constellation of other strategies present (e.g., see Zefferman (2014) on Delton et. al. (2011)). The combinatorial explosion of possibilities in this complex multi-dimensional space of possible strategies means that it is unlikely that a jukebox-like psychology could effectively address this challenge. Thus, it's not surprising that outside of humans reciprocity is rare and limited to low cost behaviors (Clutton-Brock, 2009).

Cultural evolution, however, may explain why reciprocity is so powerful in humans (Boyd & Mathew, n.d.; N. Henrich & Henrich, 2007). Social norms provide shared standards of acceptable behavior, allowing third parties to assist in identifying and punishing defectors. Intergroup competition can favor those social norms which maximize the effectiveness of direct

reciprocity under particular conditions, and this may help explain why the importance of direct reciprocity varies so dramatically among societies (Fiske, 1992). Thus, it may be cultural evolution that turns direct reciprocity from the flimsy and relatively unimportant meta-strategy that we see in other animals into a powerful force for cooperation.

Reputation underpins many models of cooperation (Barclay, 2013; Panchanathan & Boyd, 2004). However, such models are incomplete because they leave unspecified where the required reputational standards come from. Reputational standards are culturally transmitted (Salali, Juda, & Henrich, forthcoming) and vary dramatically among societies (Bell, Richerson, & McElreath, 2009), even among societies facing similar ecological circumstances (Edgerton, 1971; McElreath, 2004). Across societies, reputations are influenced not only by cooperative actions like contributing to village feasts or leading the charge against the village in the next valley, but also practices like female infibulation, funerary cannibalism, ritual participation and food taboos. Thus, any explanation that 'reputation explains cooperation' needs a theory for why reputational standards vary so dramatically among societies, and why group beneficial behaviors often generate good reputations. Driven by intergroup competition, cultural evolution may favor some elements of reputational content (e.g., for bravery in warfare) over other elements.

Finally, environmental cues may evoke evolved psychological responses that influence human sociality. For example, some argue that cues received early in life evoke either a 'fast' or 'slow' life history strategy (McCullough, Pedersen, Schroder, Tabak, & Carver, 2013), with cues of safety, security and stability favoring 'slow' life histories, and greater cooperativeness. Building on this, some argue, often in opposition to cultural evolutionary accounts, that such life history switches account for between-group variation in prosociality and the growth of moralizing religions (Baumard, Hyafil, Morris, & Boyer).

However, what's missed is that such evoked responses are precisely the kind of psychological switches that cultural group selection could harness. If slow life history strategies favor greater cooperation, then cultural group selection will favor sets of norms that stabilize families, provide social safety nets, reduce disease threats, or whatever most effectively throws the switch in ways that foster success in intergroup competition. The existence of such switches can *actually increase the variation among groups in phenotypes*, fueling the engine of cultural group selection. The spread of normative monogamous marriage provides an example of an institution that harnesses various evolved mechanisms to increase paternal investment, household relatedness and infant/child survival while reducing male-male competition (J. Henrich, Boyd, & Richerson, 2012). This culturally-evolved package is precisely the kind of institution that could throw the slow life history 'switch' and magnify the power of cultural group selection.

Overall, the existing evidence for the importance of kinship, reciprocity, reputation and evoked responses for human cooperation and sociality contributes to a *prima facie* case for cultural group selection by providing psychological mechanisms that can be exploited by relatively weak social norms to generate big differences in phenotypes between groups, thereby powering up

cultural group selection. We urge researchers to consider a more integrative approach, one that synthesizes genetic and cultural evolution.

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