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Author

Read, Dwight W

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The substance of cultural evolution: Culturally framed systems of social organization

Dwight W. Read

Department of Anthropology and Department of Statistics, University of California—Los Angeles, Los Angeles, CA 90094
dread@anthro.ucla.edu

Abstract: Models of cultural evolution need to address not only the organizational aspects of human societies, but also the complexity and structure of cultural idea systems that frame their systems of organization. These cultural idea systems determine a framework within which behaviors take place and provide mutually understood meanings for behavior from the perspective of both agent and recipient that are critical for the coherence of human systems of social organization.

Smaldino advances an argument similar to that of Lane *et al.* (2009) regarding the need to make “a shift in perspective, from population thinking to *organization thinking*” (2009:12, emphasis in the original) by arguing that models of cultural evolution have not taken into account contextualization of human behavior through systems of organization that make human behavior more complex than just as epiphenomena of individual level traits. This leads him to consider three levels for modeling selection acting on traits: (1) individual traits, (2) multilevel traits (traits aggregated over behaviors engaged in collectively by interacting group members), and (3) group traits expressed through the institutionalized organization of role-differentiated individuals (pp. 5-6). Group traits are, in his view, distinguishable by making use of the “specific organization of [role] differentiated individuals” (p. 8), with selection acting on systems of organization that maintain internal differentiation of individuals, hence acting on emergent group behavior (p. 6) rather than on individual behavior

expressed collectively, as is the case for multi-level selection.

While valid questions can be raised about Smaldino’s characterization and differentiation of these three different levels, especially with regard to his thesis that group success in human societies largely comes from “the organization of a well-defined collection of differentiated individuals all participating in a group-level behavior” (p. 10-11), my focus here is on the phylogenetic trend going from solitary to structured groups and from individual to emergent to culturally framed behavior as we evolutionarily move towards our species, *Homo sapiens*, with its subdivision into highly differentiated societies. The picture drawn by Smaldino, using his wording for the limitations of multilevel selection, “is not incorrect, but it is incomplete” (p. 10).

The evolution of human social systems centers around the development of systems of organization that incorporate, rather than suppress, individual differentiation (Read 2012). Briefly, the phylogenetic trend towards increased individualization of behaviors that we see when we traverse the primates towards *Homo sapiens* is paralleled by social complexity increasing exponentially with the number of individualistic group members (Read 2012: Figure 4.3). This increase was accommodated not only through neurological changes (Dunbar 1998) but by changes in the structural organization of social units that culminated, from a biological perspective, in reduction of the size of chimpanzee social units (Read 2012) -- where chimpanzees social organization is often taken as a model for our ancestral lineage when it diverged from the other primates (Chapais 2008) -- as a way to accommodate social complexity arising from highly individualized behavior (Read 2012: Figure 4.4). The social complexity introduced through increased individuality (what Smaldino calls “individual differentiation”), was eventually accommodated within the hominin ancestry of *Homo sapiens* by shifting from so-

cial systems based on face-to-face interaction that characterize the non-human primates (which also leads to within group, aggregated behavior upon which multi-level selection can operate) to relational based systems of social organization (Smaldino's institutionalized organization of differentiated individuals) that are culturally framed (Read 2012). The framing through cultural idea systems is not included in Smaldino's argument and is critical to our understanding of human systems of social organization (cf. Leaf 2009).

There is marked change in the ontological level at which selection operates and fitness is measured concomitant with the sequence going from genetic traits expressed individually and in isolation to traits expressed culturally and collectively. The sequence begins with fitness measured by the number of reproducing progeny, then when behavioral interaction among progeny is part of the trait, as occurs with biologically based altruistic behaviors, inclusive fitness becomes the measure of selection. With multilevel selection acting on traits expressed collectively through group structure (what Smaldino refers to as "collective behavior" or "aggregate traits"), group-derived fitness averaged over group members is assigned. Next are emergent traits, such as the linear, stable (e.g., Isbell & Young 1993, Range & Noë 2002), matrilineally inherited female dominance hierarchies (Kapsalis 2004) that emerge in many of the species making up the Cercopithecines from a female "placing" her biological daughter immediately below her in the dominance ranking (e.g., le Roux *et al.* 2011; see Read 2012 and references therein). Emergent traits, for Smaldino, provide transition from the uniformity of group behavior assumed in multilevel selection to organized, role differentiated behavior through which group level traits are expressed. Here fitness is measured directly through the group-level trait.

Missing from this sequence, though, is the critical "next step" leading to the structure and

organization of human societies (Read *et al.* 2009; Read 2012). While Smaldino correctly places importance on systems of organization that incorporate role differentiated individuals in human societies, he does not discuss the fact that these systems of organization need not be emergent, but are often cultural constructions, such as the culturally formed kinship systems that provide structure and organization in human societies, especially in the small scale societies that were the evolutionary precursors of large scale human societies. Cultural kinship systems both define the societal boundaries and provide the structure and organization that establishes the basis for the role differentiation that Smaldino discusses (Leaf 2009; Leaf & Read 2012). The kinship terminologies that express the different systems of cultural kinship relations are not emergent, as research on the structural logic of kinship systems has demonstrated (e.g., Read 1984, 2001, 2007, 2010; Leaf & Read 2012; Read *et al.* 2013). Terminologies are not the epiphenomena of already patterned behavior -- as was assumed in some of the early research on human kinship systems and has been assumed in accounts of human evolution (e.g., Chapais 2008) -- but are constructed idea systems (Leaf & Read 2012) that provide conceptual organization for the small scale societies from which present day human societies have evolved. Kinship terminology systems have a generative logic to them that can be expressed through a "grammar," and differences among kinship terminology systems are derived from systematic differences in the generative logic of kinship terminologies (Read 2013).

Models of cultural evolution need to address not only the organizational aspects discussed by Smaldino, but also the complexity and structure of cultural idea systems that frame the systems of organization that are central to human societies. These cultural idea systems determine a framework within which behaviors take place and provide mutually understood meanings for behavior from the per-

spective of both agent and recipient that are critical for the coherence of human systems of social organization.

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