

Accepted Manuscript

Hunter gatherer population structure and the evolution of contingent cooperation

Robert Boyd, Roberto H. Schonmann, Renato Vicente

PII: S1090-5138(14)00022-1
DOI: doi: [10.1016/j.evolhumbehav.2014.02.002](https://doi.org/10.1016/j.evolhumbehav.2014.02.002)
Reference: ENS 5886

To appear in: *Evolution and Human Behavior*

Received date: 5 June 2013
Revised date: 20 December 2013
Accepted date: 2 February 2014



Please cite this article as: Boyd, R., Schonmann, R.H. & Vicente, R., Hunter gatherer population structure and the evolution of contingent cooperation, *Evolution and Human Behavior* (2014), doi: [10.1016/j.evolhumbehav.2014.02.002](https://doi.org/10.1016/j.evolhumbehav.2014.02.002)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Hunter gatherer population structure and the evolution of contingent cooperation

Robert Boyd^{1,2}, Roberto H. Schonmann³, Renato Vicente⁴

December 20, 2013

1. School of Human Evolution and Social Change, Arizona State University, Tempe AZ

2. Santa Fe Institute, Santa Fe NM

3. Dept. of Mathematics, University of California at Los Angeles CA 90095

4. Dept. of Applied Mathematics, Instituto de Matemática e Estatística, Universidade de São Paulo, 05508-090, São Paulo-SP, Brazil

Abstract

Unlike other vertebrates, humans cooperate in large groups with unrelated individuals. Many authors have argued that the evolution of such cooperation has resulted from reciprocity and other forms of contingent cooperation. This argument is not well supported by existing theory. The theory of contingent cooperation in pairs is well developed: reciprocating strategies are stable when common, and can increase when rare as long as population structure leads to modest levels of relatedness. In larger groups, however, it is not clear whether contingent cooperation can increase when rare. Existing work suggests contingent strategies cannot increase unless relatedness is high, but depends on unrealistic assumptions about the effects of population structure. Here we develop and analyze a model incorporating a two level population structure that captures important features of human hunter gatherer societies. This model suggests that previous work underestimates the range of conditions under which contingent cooperation can evolve, but also predicts that cooperation will not evolve unless (1) social groups are small, and (2) the relatedness within ethnolinguistic groups is at the high end of the range of empirical estimates.

Key words: Cooperation, hunter-gatherers, population structure.

Emails: rboyd@anthro.ucla.edu, rhs@math.ucla.edu, rvicente@ime.usp.br

Download English Version:

<https://daneshyari.com/en/article/10464068>

Download Persian Version:

<https://daneshyari.com/article/10464068>

[Daneshyari.com](https://daneshyari.com)