

A PHYLOGENETIC STUDY OF SINO-TIBETAN KINSHIP EVOLUTION

TING JI¹, MAY HANZHI ZHANG², THOMAS E. CURRIE³, ANDREW MEADE⁴,
MARK PAGEL^{4,5}, and RUTH MACE^{2,6*}

*Corresponding Author: r.mace@ucl.ac.uk

¹Institute of Zoology, Chinese Academy of Sciences, Beijing, China

²Department of Anthropology, University College London, London, UK

³Department of Biosciences, University of Exeter, Cornwall, UK

⁴School of Biological Sciences, University of Reading, Reading, UK

⁵Santa Fe Institute, Santa Fe, New Mexico, USA

⁶School of Life Sciences, Lanzhou University, Lanzhou, China

Abstract

Descent and residence rules have long been of interest to anthropologists and biologists, as they structure populations and determine patterns of kinship, relatedness and cooperation. Despite the prevalence of patrilineal descent and patrilocal residence among extant Sino-Tibetan groups, belief in a matrilineal and matrilocal ancestry persists in China. Although some evidence on ancestral Sino-Tibetan kinship is now becoming available from both genetic and archaeological studies, the findings are contradictory^{1,2}. Phylogenetic comparative methods

1 Key Laboratory of Animal Ecology and Conservation Biology, Centre for Computational and Evolutionary Biology, Institute of Zoology, Chinese Academy of Sciences, Beijing 100101, China

2 Department of Anthropology, University College London, London WC1H 0BW, United Kingdom

3 Centre for Ecology and Conservation, Department of Biosciences, University of Exeter, Cornwall TR10 9EZ, United Kingdom

4 School of Biological Sciences, University of Reading, Reading RG6 6UR

5 Santa Fe Institute, Santa Fe, New Mexico 87501

6 Human Evolutionary Ecology Group, School of Life Sciences, Lanzhou University, Lanzhou 730000, China

* e-mail: r.mace@ucl.ac.uk

(PCMs) provide an alternative to examine Sino-Tibetan kinship evolution. By mapping ethnographic data of kinship systems onto linguistic phylogenies, PCM can be used to make inferences about the pattern of cultural evolution, including ancestral states and patterns of historical change in kinship along the branches of the tree³⁻⁵. Here we use PCM to examine the ancestral states and trajectory of kinship evolution in Sino-Tibetan populations.

PCMs have previously been applied to questions on the evolution of kinship systems in Bantu, Indo-European, and Austronesian populations³⁻⁵. To this date, there is no cultural comparative study that examines Sino-Tibetan kinship evolution. Sino-Tibetan cultures are largely under-represented in all existing ethnographic databases (n=30 in Ethnographic Atlas^{6,7}). We constructed a phylogenetic tree of 132 Sino-Tibetan languages using cognate data⁸ to represent the ancestral relationship among ethnolinguistic groups. We then coded the descent and post-marital residence norms of each group using a variety of ethnographic and historical sources⁹⁻¹¹. We inferred the ancestral states of residence, descent and rates of transitions between states using Bayesian RJMCMC methods as implemented in BayesTraits¹².

Our findings show that, contrary to popular beliefs in China, matrilineal descent and matrilocal/duolocal residence are likely recent adaptations among Sino-Tibetan groups. We found strong evidence that proto-Sino-Tibetan circa. 7000 BP practised patrilineal descent and patrilocal residence. Furthermore, no unidirectional model of kinship evolution received support in our analysis, transitions from patrilineal/patrilocal to matrilineal/matrilocal systems occurred at a similar rate to transitions in the other direction. With the exception of Bodo-Koch clade, there is no statistically-significant evidence of matrilineal ancestry. The Sino-Tibetan language family contains Sinitic languages and 200-300 Tibeto-Burman languages. It is one of the greatest language families in the world in the number of speakers. Genetic and archaeological studies have offered many alternative hypotheses regarding the relationships, geographical origin (e.g. Yellow river basin¹³, the Eastern Himalayas¹⁴, Sichuan¹⁵) and migration routes of the proto-Sino-Tibetans. The North-China origin hypothesis received support from two recent studies on Sino-Tibetan linguistic phylogeny^{16,17}. However, the estimated Sino-Tibetan root age in the two studies varies (5900 years vs. 7200 years). We address the uncertainties of homeland and the exact age of Sino-Tibetan cultures by comparing the likelihoods of phylogenetic reconstructions with different candidate homeland clades fixed as the outgroup, and with different

ages of the root. Our qualitative findings are robust to uncertainties surrounding Sino-Tibetan homeland and population history.

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