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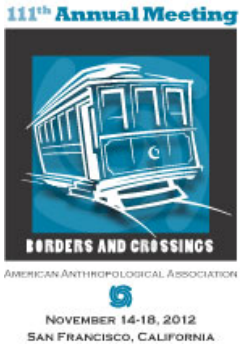

AppEEL members are organizing a symposium for the 2012 AAA meeting on trees and networks of cultural transmission. The symposium will be part of the Evolutionary Anthropology Society meeting, and is scheduled for **Thursday, November 15, 2012, from 08:00 AM to 09:45 AM**, at the Hilton San Francisco, Golden Gate 3, San Francisco, USA.

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AAA SESSION ON CULTURAL TRANSMISSION STUDIES: TREE AND NETWORK MODELS OF MICRO- AND MACROEVOLUTION

Organized by Nathalie Gontier and Emanuele Serrelli and Chaired by Larissa Mendoza Straffon

In biology, phylogenetic tree models (based on shared morphological traits, genes, or proteins) remain the primary methodological tool to reconstruct evolutionary ancestral-descent relationships. Phylogenetic and phylogenomic methodologies are also applied to reconstruct linguistic and cultural descent relationships. Such reconstructions have now advanced up to the point that one can estimate divergence in time, and the rate at which such linguistic or cultural divergence occurred. Both biological as well as sociocultural phylogenetics now demonstrate that besides natural selection, drift and punctuated equilibria theory can explain many of life's and sociocultural divergences. And comparative analyses demonstrate that ancestral-descent relations of human populations significantly overlap with linguistic family trees and cultural diversification trees. Phylogenetics has also brought to light that horizontal evolution occurs abundantly in life's evolution, and scholars active in the field have therefore challenged classic tree of life iconography. Today, scholars active in Horizontal Gene Transfer studies are therefore introducing network phylogenies ("webs of life") that allow the depiction and modeling of reticulate

evolution. In the sociocultural sciences, linguists, archeologists and anthropologists have criticized hominin and cultural bifurcating trees because they are unable to depict hominin hybridization and horizontal transmission and diffusion of sociocultural traits. And here too, network models are introduced that allow the formalization and depiction of linguistic and sociocultural interactions through time. In sum, biological and sociocultural sciences both make use of tree and network models to depict biological and sociocultural evolution. We will examine how cultural trees and networks are composed differently (which data are used to compose trees and networks), what they can and cannot model, how inferences are made, and how they enable theory formation on cultural evolution.

THE 'GLOBAL PHYLOGENY' AND ITS HISTORY: A CRITICAL APPRAISAL OF A UNIFIED THEORY OF HUMAN BIOLOGICAL AND LINGUISTIC CO-EVOLUTION

Frank Kressing
Ulm University

Starting in the late 20th century, "new" approaches claiming a direct link between the evolution of linguistic and biological diversity in humans received broad attention in the sciences and the general public. Based on an extensive literature review, we claim that, contrary to its supposedly innovative character, the post 1980 'new synthesis' of genetic, linguistic, and archaeological data was based on a well-established western tradition dating back at least until the 18th century. Special emphasis will be put on the importance of interdisciplinary reticulations between scholars in the sciences (such as biology and comparative anatomy) and the humanities (such as linguistics). In our overview, it shall be argued that interdisciplinary contact between these two fields resulted in the construction of links between the classification of languages and the classification of human populations. Furthermore, it shall be stressed that the theory of human biological and linguistic co-evolution was developed in the 18th and 19th century within the framework of anthropology, since this academic discipline evolved as an all-encompassing, integrative science dealing with human nature in its physical and cultural aspects. Finally, 20th-century attempts at the 'genomization' of human cultural, ethnic, and linguistic affiliations will be critically analysed, highlighting the fact that theroots of the so-called global phylogeny are 'once again' to be found in interdisciplinary scholarly networks transgressing the borders between the sciences and the humanities.

THE CHALLENGE OF TREE-THINKING AND NETWORK-THINKING: CONCEPTUAL ISSUES ACROSS BIOLOGICAL AND CULTURAL DOMAINS

Emanuele Serrelli
University of Milano Bicocca

This talk gives a reflexive outlook on the employment of tree and network thinking to conceptualize and model vertical descent and horizontal transmission of cultural traits. In biology, evolutionary trees are more than tools for researchers across disciplines: they are

the main framework within which evidence for evolution is evaluated (Baum et al. 2005). However, several biologists have recognized "tree thinking" as a challenge for students (Gregory 2008, Meisel 2010), lay people (Baum, cit.), and scientists alike (O'Hara 1992), going against our spontaneous cognitive tendencies, e.g., reading along the tips, locating evolution only at nodes, projecting living species backwards to internal nodes. Moreover, common descent, represented by trees, is not the only way in which biological traits are shared: the ubiquity of phenomena like lateral gene transfer is increasing the need for network-based analyses, introducing the conceptual challenge of "network thinking" (Proulx et al. 2005), and the further complexity of conceiving trees and networks together. I focus on which strategies, used and developed in biology, can be implemented in anthropology to address cultural relatedness and common ancestry relationships. Baum DA et al. (2005). The tree-thinking challenge. Science 310(5750):979-980. Gregory TR (2008). Understanding evolutionary trees. Evolution: Education and Outreach 1(2):121-137. Meisel RP (2010). Teaching tree-thinking to undergraduate biology students. Evolution: Education and Outreach 3(4):621-628. O'Hara RJ (1992). Telling the tree: Narrative representation and the study of evolutionary history. Biology and Philosophy 7(2):p.135–160. Proulx SR et al. (2005). Network thinking in ecology and evolution. Trends in Ecology and Evolution 20(6):345-53.

COMPARING RATES OF CULTURAL CHANGE ACROSS TREES - DO SOME TRAITS EVOLVE FASTER THAN OTHERS?

Ruth Mace and Tom Currie
London, OXFORDSHIRE

Ruth Mace and Tom Currie examine the rate of evolution of cultural traits across different phylogenetic trees, to see if cultural traits themselves share any particular properties regarding the rate of change on a tree, or whether traits are simply change according to local ecological conditions or some other factors that are not shared across trees. We use recent phylogenetic methods to estimate rates of change in a range of traits common to most societies.

PHYLOGEOGRAPHIC APPROACHES TO TRACING HUMAN CULTURAL ANCESTRY

Quentin Douglas Atkinson
University of Auckland

Recent work on cultural evolution has successfully applied phylogenetic methods from biology to comparative cultural and linguistic data to test hypotheses about cultural ancestry, chronology and sequences of change. However, relatively little attention has focussed on explicitly modelling large-scale spatial processes of cultural change. Here I report results from collaborative research that uses tools from population genetics and phylogeography to analyze spatial information derived from comparative cultural data. This work identifies clear spatial signal in the data that can be used to shed light on the

origins of cultural groups.

UNITS, LEVELS AND MECHANISMS OF CULTURAL EVOLUTION, AN APPLIED EVOLUTIONARY EPISTEMOLOGICAL ACCOUNT

Nathalie Gontier

Applied Evolutionary Epistemology Lab, Centre for Philosophy of Science, University of Lisbon

Tree and network models of cultural micro- and macroevolution demonstrate the current scientific need to recognize that a multiplicity of units, levels and mechanisms underlie the evolution of culture. This demand also necessitates a scientific investigation into how these different sociocultural units, levels and mechanisms alternate and interact hierarchically, and together bring forth the phenomenon of evolution. From within an applied evolutionary epistemological approach, I will talk on how theories on the units (replicators, interactors, culturgenes, memes) and levels of evolution can be implemented into micro- and macroevolutionary sociocultural theories; and which evolutionary mechanisms are best able to explain horizontal and vertical transmission.

MOSAIC EVOLUTION IN CULTURAL AND BIOLOGICAL FRAMEWORKS: DYNAMICS VARY WITH SCALE

Anna Marie Prentiss and Matthew Joseph Walsh

University of Montana

There has been significant debate in paleoanthropology and more recently, archaeology, over the concept of mosaic evolution. Essentially, proponents of the concept argue that different aspects of organisms evolve separately while others argue that organisms evolve as integrated entities. Similarly, archaeologists debate the relevance of cultural evolution as a complex multi-scalar process. In this paper we conduct cladistic and network analyses of cultural phenomena ranging in scale from single artifact classes to more complexly integrated cultural packages to examine variability in the evolutionary process. We argue that cultural evolution is simultaneously multi-scalar and that dynamics can vary significantly with different degrees of integration.

USING CLADISTICS TO INTERPRET ARCHAEOLOGICAL ASSEMBLAGES: THE SLATE TOOL TRADITION AT BRIDGE RIVER, BRITISH COLUMBIA

Matthew Joseph Walsh and Anna Marie Prentiss

The University of Montana

In recent years phylogenetic studies have offered a wide range of contributions to explanation of complex evolutionary phenomena in the archaeological record. In this study we apply cladistic and network methods to assess the evolution of slate tools at the Bridge River site in British Columbia. We examine relationships between artifact assemblages

from several housepits at the site in order to determine if heritable continuity can be established on an inter- and intra-household basis. This allows us to examine variability in the role of descent with modification manifested in branching versus a range of potential tokogenetic processes. We argue that while distinct household-specific traditions of tool manufacture existed, the data are made complicated by extensive borrowing of ideas and functional differentiation in tool design.

PLEISTOCENE NETWORK INTERACTIONS AND THE ORIGINS OF VISUAL ART

Larissa Mendoza Straffon
Leiden University

In recent years scholars have come to the realisation that models which account for the emergence of behavioural traits, such as visual art, simply in terms of increasing human cognition are not viable. The so-called cognitive models cannot generate falsifiable predictions about the conditions under which such traits would have developed. Equally problematic are evolutionary scenarios of art that put forward some possible adaptive function as cause of its origin (e.g. visual art evolved for mate choice, for ritual, etc.). When contrasted against current evidence from the archaeological record, these postulates generally do not hold. This paper presents an hypothesis for the origins of visual art which incorporates up-to-date archaeological data into a testable evolutionary explanation. This model is based upon specific aspects of Pleistocene human groups, such as group size and social organisation. It is suggested that visual art arose as a signal of identity and an index of reputation under selective pressures towards increasing cooperation and intensified network interactions in the Late Pleistocene. Recognition through style in visual art would have conveyed adaptive benefits by making social interactions more predictable thus reducing risks of conflict and aggression, in turn allowing large-scale reciprocity systems to flourish. In this sense, visual art may be conceived of as a communication signal manifested in stylistic variation in material culture. Finally, the paper shows that this hypothesis is consistent with the archaeological record of visual art.

THE ECONOMICS OF CULTURAL TRANSMISSION

Alberto Bisin
New York University

This paper surveys the recent theoretical and empirical studies on the economics of cultural transmission. The aim of the survey is to emphasize both similarities and differences in the economic analysis of this topic with respect to the literatures in evolutionary biology, anthropology, and sociology.