
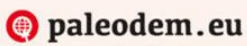


**Social Networks and Cultural Evolution
in Prehistoric Hunter-Gatherers**

27 October / 3, 10, 17 November 2020



 paleodem.eu

◆ **ABSTRACTS BOOKLET** ◆

PALEODEM WEBINAR 1 – *Social Networks and Cultural Evolution in Hunter-Gatherers: Ethnographic and archaeological perspectives. October 27th, 2020. 17:00 – 19:00 CET*

From hunter-gatherers foraging niche to the evolution of human cumulative culture.
Andrea Migliano - *University of Zurich (Switzerland)*

Various studies have investigated cognitive mechanisms underlying culture in humans and other great apes. However, the adaptive reasons for the evolution of uniquely sophisticated cumulative culture in our species remain unclear. We propose that the cultural capabilities of humans are the evolutionary result of a stepwise transition from the ape-like lifestyle of earlier hominins to the foraging niche still observed in extant hunter-gatherers. Here we study two hunter-gatherer groups: the Agta from the Philippines and BaYaka from Congo, analysing their social structures and interactive social networks. Our ethnographic results add to the compelling evidence that the components of the foraging niche (division of labour, extensive co-residence with unrelated individuals, bilocality, fluid sociality and high between-camp mobility) engendered a unique multilevel social structure where the mechanisms underlying cultural evolved as adaptations. The foraging niche perspective accounts for why a complex cumulative culture evolved uniquely in *Homo sapiens* as a process of recombination of innovations appearing in differentiated but interconnected populations.

From communities of practice to networks and cultural phylogenies – scalar perspectives on cultural evolution in prehistoric hunter-gatherers.

Felix Riede - *Aarhus University (Denmark)*

The idea that culture evolves in a Darwinian way is fundamentally premised on the social transmission of knowledge and know-how between people. The practicalities of kin relations and social organization predicate that a great deal of such transmission occurred within relatively bounded social groups, which have often been labelled – from a material culture perspective – as ‘communities of practice’. Over time, such transmission processes create recognizable lineages of culture change traceable through archaeological proxies. The individuals making up these communities engage in wider social interactions as well, however, creating and maintaining networks of horizontal transmission. In this presentation, I review these different scales of interaction and, drawing on previous work on the Final Palaeolithic of Europe, show how different data and methods – technological and geometric morphometric analysis, network analyses and phylogenetics – can be used to capture them.

PALEODEM WEBINAR 2 – *Social Networks and Cultural Evolution in Hunter-Gatherers: Long-term patterns, mobility, and human ecology constraints. November 3rd, 2020. 17:00 – 19:00 CET*

The complex fluid ecology of hunter-gatherer societies.
Marcus J. Hamilton, *University of Texas at San Antonio (USA) / Santa Fe Institute*

Hunter-gatherer ecology is structured by flows of energy and information among individuals, groups, and environments at multiple scales of social organization. Hunter-gatherer societies are multi-tiered metapopulations of social groups that interact through fission-fusion dynamics forming a complex fluid network. The structural fluidity of these social networks allows for considerable plasticity in response of populations to environmental fluctuations and is undoubtedly key to understanding why foraging was such a successful socioeconomic lifestyle throughout human evolutionary history. However, this fluidity is finite. Hunter-gatherer ecology is constrained by environmental productivity as all metabolic requirements for growth, maintenance, reproduction, material culture, and well-being must be supplied by local resources. In this talk I discuss how key components of hunter-gatherer ecology – social structure, group size, density, and mobility – are interrelated. Moreover, from fundamental principles of ecology I show how we can derive theory to explain how flows of information and energy between hunter-gatherers and their environments result in these complex socioecologies.

Combining agent-based least-cost path, environment reconstruction, and network analysis to document Paleolithic social behavior.

Claudine Gravel-Miguel - *Arizona State University (USA)*

As modern hunter-gatherers maintain social networks to act as safety nets when facing resource insecurity, it is logical to think that networks served a similar purpose during prehistory. Testing this hypothesis requires studying prehistoric networks within their environmental context, which should include evaluating how topography affects mobility, as natural barriers likely influenced which prehistoric networks could be created and maintained. Through its focus on different projects reconstructing the social networks of Upper Paleolithic populations in southwestern Europe, this presentation will demonstrate the potential of integrating mobility and environmental data to mitigate some of the challenges faced by Paleolithic archaeologists attempting to reconstruct networks from patchy datasets, to and understand how social networks may have been used during the Upper Paleolithic.

PALEODEM WEBINAR 3 – *Social Networks and Cultural Evolution in Hunter-Gatherers: Social Networks and Cultural Evolution in Hunter-Gatherers: interplay among social structure, demography, and cumulative culture. November 10th, 2020. 17:00 – 19:00 CET*

Cumulative Cultural Evolution within Evolving Population Structures.

Maxime Derex - CNRS / *Institute for Advanced Study in Toulouse (France)*

Our species has the peculiar ability to accumulate cultural innovations over multiple generations, a phenomenon termed ‘cumulative cultural evolution’ (CCE). Recent years have seen a proliferation of empirical and theoretical work exploring the interplay between demography and CCE. This has generated intense discussion about whether demographic models can help explain historical patterns of cultural changes. Here, I will outline the key ideas underlying demographic models of cultural evolution, discuss common misconceptions and will present experimental and theoretical results illustrating how population size and structure can affect CCE. I will argue that studying the nature and emergence of knowledge-sharing networks in natural populations can shed a new light on how humans have managed to accumulate cultural information in such an unprecedented way.

A Probabilistic Approach to Constructing Longitudinal Networks from Archaeological Data.

Erik Gjesfjeld - *University of Cambridge (UK)*

Cumulative cultural evolution is a powerful driver in how material culture changes over time; however, examining CCE in the archaeological record presents a series of methodological challenges. One of the most significant is connecting changes in population and material culture that occur over centuries or millennia with models of social interaction between individuals or communities that occur on much smaller scales. Here, we produce a time-series of networks to explore long-term changes in the connectedness of Jomon hunter-gatherer communities. This approach proceeds by building probabilistic networks based on the occupation history and spatial proximity of archaeological sites. Longitudinal changes in network structure serve as the basis for constructing hypotheses on how the connectedness of communities, and not just population size, influences the cumulative diversification of material culture during the Middle and Late Jomon.

PALEODEM WEBINAR 4 – Social Networks and Cultural Evolution in Hunter-Gatherers: Spatio-temporal dynamics and complex networks. November 17th, 2020. 17:00 – 19:00 CET

Myths of Diffusion and the Power in the Periphery

Damon Centola - *University of Pennsylvania (USA)*

Abstract: For decades, our standard ideas about social and cultural change have been based on a popular metaphor — that change spreads like a virus. In this talk I will dispel several myths that result from this idea – *The Myth of the Influencer*, *The Myth of Virality*, and *The Myth of Stickiness*. These myths have clouded our understanding of social networks and social change, and led past marketing campaigns and public policy initiatives to backfire. I will discuss new findings from my forthcoming book *CHANGE* (2021). I show that the problem with the viral metaphor is that it describes a world where information spreads quickly, yet beliefs and behaviors stay the same. It is a world of *simple contagions* — catchy ideas and memes that spread quickly to everyone but lack any lasting impact on what we think or how we live. Real social change is far more complicated because our decisions about whether to accept or reject new beliefs are often complex and emotional. This much-deeper process of social spreading is called *complex contagion*, and it has given rise to a new science for understanding how change happens — and how we can help *make* it happen.

When prehistoric archaeology meets network science: Testing demography-dependent models of cultural change.

Sergi Lozano ¹, Valeria Romano ², Magdalena Gómez-Puche ², Carolina Cucart ², Javier Fernández-López de Pablo ^{2 – 1} University of Barcelona; ² INAPH, University of Alicante (Spain)

Although the concept of social networks has been widely applied in prehistoric archaeology, the interplay between hunter-gatherers' regional social structure and cultural dynamics is still largely underexplored. In the context of the ERC project PALEODEM (Ref. 683018), we use network science techniques to test demography-dependent evolutionary models of cultural change. Specifically, our aim is to decipher the relationship between long-term changes in socio-spatial connectivity and cultural transmission during the Late Glacial and Post-Glacial periods in the Iberian Peninsula. To this end, we are unfolding a methodology combining the construction and analysis of archaeological networks with agent-based modelling of diffusion processes on dynamic networks.