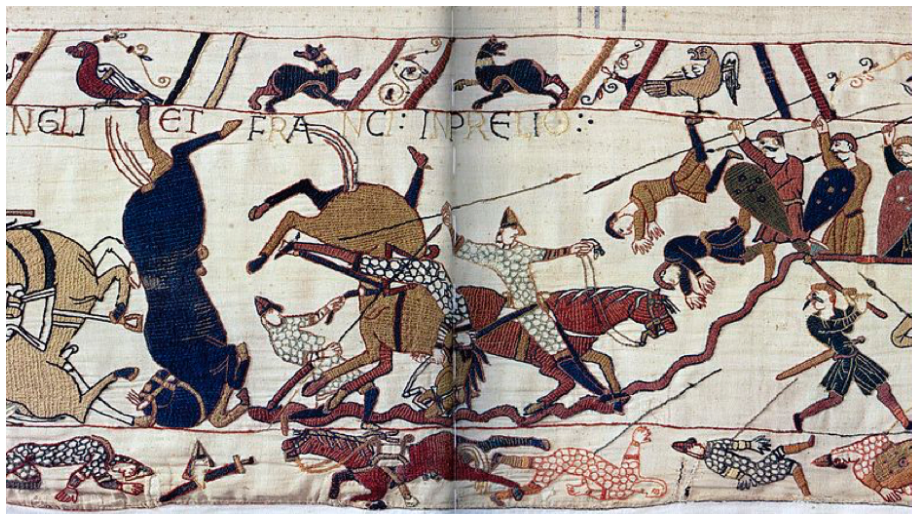# Explaining the Rise of Mega-Empires:
A Model of Cultural Multilevel Selection

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What are the social forces that hold together complex societies encompassing hundreds of millions of people? How did human ultrasociality – extensive cooperation among large numbers of unrelated individuals – evolve? The theory of cultural multilevel selection is a powerful theoretical framework for addressing these questions. I use this framework to investigate a major transition in human social evolution, from small-scale egalitarian groups to large-scale hierarchical societies such as states and empires. A key mathematical result in the theory is that large states should arise in regions where interpolity competition – warfare – is particularly intense, resulting in high probability of cultural trait extinction. To make these general ideas more concrete I describe a model for the evolution of large states during the Ancient and Medieval eras, motivated by the ideas of Ibn Khaldun. Ibn Khaldun primarily focused on the interaction between pastoralists and farmers in the Maghreb (Northern Africa), but I extend his theory to Afroeurasia as a whole. The 'mirror-empires' model proposes that antagonistic interactions between steppe pastoralists and settled agriculturalists within, or next to the Old World's arid belt (running from the Sahara desert to the Gobi desert) result in an autocatalytic process, which pressures both pastoralist and farming polities to scale up in polity size and military power. Thus, location on, or near a steppe frontier should correlate with the frequency of imperial genesis. I survey extensive historical data that support this prediction.