ROADMAP: I review aspects of human dynamics that link macro-historical, micro-sociological and evolutionary processes. The findings and hypotheses that I use to link these domains allow the modeling of how humans mobilize scalable social organization through the dynamics of socially cohesive networks. The implications and use of scalable k-cohesion measures enable exploration of micro-macro linkages between scalable properties of k-cohesive groups—having cohesion intensity k and extensive e(k) group size for each connectivity intensity k—and sociopolitical processes. Unlike species unable to take advantage of such scalability, humans can and do so. The k and e(k) measures of cohesive groups entail strong causal effects that have been replicated and validated in various sociological and anthropological network studies. Some initial qualitative dynamics of major historical processes in human behavior, as related to warfare and empire formation, are consistent with scale-up of sociopolitically k-cohesive groups that expand across metaethnic frontiers to evoke resistance operating counteractively through k-cohesive scale-up through growth-by-opposition. Some current studies of such issues use sufficient levels of aggregation to successfully assess dynamic interactions between macro-variables in sociopolitical processes (Turchin 2003, 2005), some of which involve political unit cohesion and scale. Others, as in the conflict studies of Lim, Metzler and Bar-Yam (2007), use field-theory models of spatial interaction.

New proposals, questions, and results for human evolutionary modeling hold the promise of linking scalable k-cohesive groups to many variables and models used in evolutionary models of cooperativity, and to models of evolutionary transitions in sociopolitical organization. I used these various kinds of empirical studies to illustrate concepts and methods in dynamics and complex systems that are applicable to human behavior in the domains I have chosen to review. The mainline arguments illustrated here are expanded by reviews of work on causal process models that combine micro-analysis of sociopolitical and economic behavior in the context of institutions, networks, historical ethnography, and network economic experiments. New directions are flourishing in causal modeling, including multifractality and agent behavior. They evince further need for development of historically longitudinal databases, advancement of methods for dynamical analyses, and use of multilevel modeling that incorporates network representation and conceptualization.

KEYWORDS: Historical dynamics, human sociopolitical networks, micro-macro linkages, k-cohesive groups, extensive and intensive variables, cohesive resistance, structurally cohesive group detection, scalability, community detection, expansionary and resistance groups, metaethnic frontiers, dynamics of conflict, qualitative dynamics, major historical processes, warfare and empire formation, up-scaling, growth-by-opposition dynamics, evolutionary models of cooperativity, evolutionary transitions models, sufficient-unit aggregation, causal process modeling, agent behavior, micro-analysis, institutions, historical ethnography, network economic experiments, multifractality, historically longitudinal databases, multilevel models, complexity methods.

1 Scalability of a cohesive group with a given intensive k-cohesion measure results from a mathematical corollary of this measure and the Menger (1927) connectivity theorems: e(k) can expand indefinitely without the need to increase the average number of ties per member, k being lack of vulnerability to disconnection by removal of k or fewer members.