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Graham Sack is a doctoral candidate at Columbia University, where his research is focused on the application of quantitative and computational methods to the study of culture. His publications and working papers range from descriptive analyses of cultural history based on automated text analysis and social network extraction to generative models of cultural evolutionary processes and social influence. This work is necessarily interdisciplinary and crosses boundaries between digital humanities, computational social science, computer science, and complex systems.

His recent publications include: “Character Networks for Narrative Generation: Structural Balance Theory and the Emergence of Proto-Narratives” in Complexity and the Human Experience: Modeling Complexity in the Humanities and Social Sciences; “Social Network Analysis and Narrative” in the International Journal for Language Data Processing; and "Simulating the Cultural Evolution of Literary Genres" in the proceedings of the Genetic and Evolutionary Computation Conference.

He has taught courses and workshops at Columbia University, University of Michigan's Center for the Study of Complex Systems, and NTU-Warwick's Winter School on Complexity and has presented research at the Santa Fe Institute, the Computational Social Sciences Society of the Americas, the Human Behavior and Evolution Society, the Association for the Advancement of Artificial Intelligence, the Genetic and Evolutionary Computation Conference (GECCO), SwarmFest, SpringSim, Human Complexity, Computational Models of Narrative, and Political Networks, amongst others.

In addition to completing a PhD in Digital Humanities at Columbia University, he holds an MSc in Economics from the London School of Economics, and a BA in Physics from Harvard College.

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Culture as a Complex System

This talk will be concerned with two questions: How does the “complex systems lens” helps us to better understand and model “culture”? How is the “culture as CAS” perspective useful and relevant to policy-makers?

“Culture” is a famously ambiguous term: a recent survey of academic literature found more than 250 different definitions. In this talk, the term will be used in a variety of senses including: (1) “culture” as beliefs, opinions, transferable traits, or “memes”; (2) “culture” as agents’ internal models of how the world operates; (3) “culture” as social learning, practices, and behavior, (4) “culture” as material artifacts, such as art or technology.

Moreover, “culture” interacts with policy-making in a complex and non-linear ways: (1) “culture” is an important and frequently latent factor that affects the behavior of social-agents in policy-problems (e.g., interactional norms, social practices, taboos and stigmas, etc.); (2) “culture” may be directly managed and modified by policy (via media, education, arts and cultural funding, etc.); (3) “culture” informs, influences, and constrains the internal models that policy-makers use to analyze problems and reach solutions (via belief, opinion, ideology, etc.).

Given the wide-ranging conceptions both of what culture is and how culture operates, we will need a diverse and flexible (but still rigorous) toolkit for modeling relevant mechanisms.

Complex systems theory provides a highly relevant basket of tools, including agent-based modeling, network analysis, information theory, genetic algorithms, and evolutionary game theory. It also provides a flexible framework for thinking about complex, diverse, and constantly changing systems. A major emphasis of the talk will be thinking in terms of such models and being creative about how to adapt them to the domain of culture.