Sanda Kaufman

Presentation - Sanda Kaufman is Professor of Planning, Public Policy and Administration at Cleveland State University's Levin College of Urban Affairs. She directs the Master of Environmental Studies Program. Her research spans: negotiations in environmental and other multi-stakeholder public conflicts; social-environmental systems resilience; risk communication; program evaluation; and planning and negotiation pedagogy. Her interdisciplinary research includes collaborations with scholars in planning, public administration, law, physics, statistics, and with conflict management practitioners. Her current projects focus on governance and sustainable space management of "legacy cities," and on anticipating polarized social conflicts such as around high-stakes planning and environmental decisions. Her articles have appeared in the *Journal for Conflict Resolution*, the *Negotiation Journal, Conflict Resolution Quarterly, Revue Négociations, Negotiation and Conflict Management Research, Hamline Journal of Public Law & Policy, Missouri Journal of Dispute Resolution, Environmental Practice,* the *Journal of Architectural Planning & Research,* the *Journal of Planning Education & Research, Journal of Evaluation and Program Planning, Planning Theory & Practice,* the *International Journal of Economic Development, Physica A, Fractals,* andothers. Kaufman holds degrees in Architecture (B.Arch.) and in City and Regional Planning (M.Sc.), and a PhD in Public Policy Analysis (Carnegie Mellon University).

Research project - Our "social physics" project applies statistical physics techniques to multi-group social conflict. It will expand to several groups the results we obtained for two groups. Individuals in each group have an attitude ranging between collaborative, very open to negotiating an agreement to incline to protracted conflict due to extreme adherence to the group's position. We quantify the noise as a "social temperature" T. We assume everyone interacts with everyone in time within their own group and across groups, as on an Erdös-Renyi network. The Hamiltonian H of the interactions depends on the attitude variables. We use the Boltzmann probability weight, exp(-H/T), to compute the probability distributions for attitudes. We explore by means of Monte Carlo simulations effects of the network topology on the qualitative behavior of the model. Its predictions include temporal oscillations of the attitudes towards negotiation or conflict. Monte Carlo simulations exhibit chaotic time dependence of the mean attitudes. We illustrated the model's use with the 2016 US presidential elections and the Brexit vote. Before the outcome has materialized, the model can help a group devise or alter its strategy in response to the dynamics at work, by generating possible scenarios. Either group could ask what-if questions that can assist in selecting and altering in time a strategy that will be wise for a range of scenarios instead of just one predicted possibility. This anticipatory approach is conducive to robust decisions that can withstand more contextual challenges than decisions based on predicted futures.

Events –

- *Seminar :* Presentation of current research on anticipating the spatial distribution of businesses in a regional space along multiple years, using a dynamic network model.
- *Conference :* Participation atNetSci, Paris

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