



# Dynamical Networks and Systems As a Model of Social Fragmentation

**Dr. Hiroki Sayama**

**Professor, Systems Science and Industrial Engineering,  
Thomas J. Watson College of Engineering and Applied  
Science, Binghamton University**

**Wednesday May 12, 2021**

**8:30-9:30am EDT / 6:00-7:00pm IST Online (Zoom)**

**Registration link: <https://bit.ly/3xOi05t>**



**Abstract:** Social fragmentation, the transition of social states to disconnected groups that are in serious disagreements with each other, has become a highly relevant and critical issue in modern society. Such transitions can be modeled and understood as a potential consequence of social self-organization facilitated by a variety of socio-political and technological factors. In this talk, we will review our three recent projects that utilized dynamical networks and partial differential equations as modeling frameworks. Specifically, we address (1) the formation of extreme ideas and social fragmentation caused by social conformity and homophily in adaptive social networks, (2) widening disagreement among opinionated groups due to people's enhanced ability of information gathering, and (3) how those problems might be overcome by promoting social constituent diversity.

**About the Speaker:** Dr. Hiroki Sayama is a Professor in the Department of Systems Science and Industrial Engineering, and the Director of the Center for Collective Dynamics of Complex Systems (CoCo), at Binghamton University, State University of New York, USA. He also serves as a non-tenured Professor in the School of Commerce at Waseda University, Japan, as well as an External Faculty member of the Vermont Complex Systems Center at the University of Vermont. He received his B.Sc., M.Sc. and D.Sc. in Information Science, all from the University of Tokyo, Japan. He did his postdoctoral work at the New England Complex Systems Institute in Cambridge, Massachusetts. His research interests include complex dynamical networks, human and social dynamics, collective behaviors, artificial life/chemistry, interactive systems, and complex systems education, among others. He is an expert of mathematical/computational modeling and analysis of various complex systems. He has published nearly 200 peer-reviewed journal articles and conference proceedings papers and has written or edited 14 books and conference proceedings about complex systems related topics. His open-access textbook on complex systems modeling and analysis has been downloaded more than 63,000 times globally and has become one of the standard textbooks on this subject. He currently serves as an elected Council and Executive Committee member of the Complex Systems Society (CSS), the Chief Editor of Complexity (Wiley/Hindawi), an Associate Editor of Artificial Life (MIT Press), and as an editorial board member for several other journals.

**Coordinators:** Dr. Prasanth A S [asp.mech@psgtech.ac.in](mailto:asp.mech@psgtech.ac.in), Dr. Hiroki Sayama [sayama@binghamton.edu](mailto:sayama@binghamton.edu)

**Website:** <https://sites.google.com/psgtech.ac.in/psg-binghamton/>