

DESCRIPTION FOR THE GENERAL PUBLIC

Why achieving a desirable rate of vaccination in modern societies is challenging, despite many known facts about the advantages of mass vaccination? What can be the reason of the rise of mental health disorders among undergraduate students? What can happen when immigrants bring their earlier habits and norms to a new social environment? How different economic and social factors affect female labor participation, their welfare and happiness? Why some ideas, practices and products spread so fast while the diffusion of other is hampered?

Over the past few years, attempts have been made to answer the above questions within the concepts of social hysteresis (SH) and tipping points (TP). The term 'hysteresis' has its origins in the ancient Greek and is derived from the word meaning 'lagging behind'. Although originally it was used to describe a phenomenon related to magnetism, presently it appears in many fields of natural and social sciences. For example, it has been confirmed empirically that public opinion exhibits SH and TP, which means that it remains seemingly resistant to change (which is related to hysteresis) and then a sudden, abrupt shift of opinion can be observed at the tipping point. However, we still do not know what factors affect SH and TP. For example, do contemporary channels of social influence, such as social media promote the formation of hysteresis, or do mass media play a more important role? Determining which factor and in which cases could have the strongest impact on SH and TP is the main goal of this project.

Within the project, we use an integrated, multidisciplinary approach that combines sociological concept of SH proposed by Bourdieu, with ideas that appear independently in the mathematical theory of nonlinear dynamical systems, mainly the catastrophe theory, and statistical physics of phase transitions. A platform that enables such a comprehensive approach is called agent-based modeling (ABM). It allows us to answer "Why?", not just "How?".

The pioneering nature of this project is twofold. Firstly, although SH is an extremely important phenomenon for social dynamics, for years it was overlooked, probably because of insufficient empirical evidence. Recently, an increasing interest in SH is observed, but still it has not been studied systematically and quantitatively and thus many questions are still open. Secondly, although ABM will be the main tool, we will combine it with concepts and methods of nonlinear dynamics, the theory of phase transitions, and with Bourdieu's concept of SH. Due to our knowledge, such a multidisciplinary approach has been never used before to describe and explain social hysteresis.