

The (chemical) kinetics of social phenomena

Yannis C. Yortsos

USC Viterbi School of Engineering

Based on a definition of technology as “exploiting phenomena for useful purposes”, we discuss similarities and differences between phenomena of a physical nature and phenomena of a social nature. We present examples of aggregate social phenomena, such as the evolution of technology, which can be modeled as simple chemical reactions with associated kinetics. Of a different kind, but with the same methodological approach, we propose the modeling of urban crime using concepts of an (enzymatic) chemical reaction. Such models allow us to identify relevant parameters and variables the control of which can lead to effective prevention and/or intervention. We then further focus on the difference between natural and social phenomena, discuss important differences in their distributions (Gaussian vs. power-laws) and suggest approaches (some based on digital media) that may lead to the better modeling and understanding of social phenomena, the richness of which is worth exploring.