

A reinforcement learning approach to explore the role of social expectations in altruistic behavior

R. Castañón Naseiro; F.A. Campos Fernández; J. Villar Collado; A. Sánchez Sánchez

Abstract-

While altruism has been studied from a variety of standpoints, none of them has proven sufficient to explain the richness of nuances detected in experimentally observed altruistic behavior. On the other hand, the recent success of behavioral economics in linking expectation formation to key behaviors in complex societies hints to social expectations having a key role in the emergence of altruism. This paper proposes an agent-based model based upon the Bush–Mosteller reinforcement learning algorithm in which agents, subject to stimuli derived from empirical and normative expectations, update their aspirations (and, consequently, their future cooperative behavior) after playing successive rounds of the Dictator Game. The results of the model are compared with experimental results. Such comparison suggests that a stimuli model based on empirical and normative expectations, such as the one presented in this work, has considerable potential for capturing the cognitive-behavioral processes that shape decision-making in contexts where cooperative behavior is relevant.

Index Terms- Altruism, Behavioral Economics, Physics of Complex Systems, Reinforcement Learning, Agent-Based Models, Dictator's Game

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