

What Is Arrow's Impossibility Theorem?

Jesse He

17 June 2021

Consider an election where voters are asked to rank each of three candidates. Is there a “good” way to choose a winner? A famous result in social choice theory, Arrow's impossibility theorem tells us that the answer is no for a particular definition of “good”: A system satisfying certain conditions will always produce a dictator. However, the generalization of this question to an infinite electorate quickly leads us into the world of ultrafilters. This talk will formulate Arrow's theorem and give an elementary proof before introducing the ultrafilter perspective and investigating if an infinite electorate really eliminates our dictator.