Simplicity-Expressiveness Tradeoffs in Mechanism Design

Paul Dütting Felix Fischer David C. Parkes

Everything should be made as simple as possible, but no simpler.

Albert Einstein

Abstract

A fundamental result in mechanism design theory, the so-called revelation principle, asserts that for many questions concerning the existence of mechanisms with a given outcome one can restrict attention to truthful direct revelation-mechanisms. In practice, however, many mechanisms use a restricted message space. This motivates the study of the tradeoffs involved in choosing simplified mechanisms, which can sometimes bring benefits in precluding bad or promoting good equilibria, and other times impose costs on welfare and revenue. We study the simplicity-expressiveness tradeoff in two representative settings, sponsored search auctions and combinatorial auctions, each being a canonical example for complete information and incomplete information analysis, respectively. We observe that the amount of information available to the agents plays an important role for the tradeoff between simplicity and expressiveness.