People use fast, goal-directed simulation to reason about novel games

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Abstract

We can evaluate features of problems and their potential solutions well before we can effectively solve them. When considering a game we have never played, for instance, we might infer whether it is likely to be challenging, fair, or fun simply from hearing the game rules, prior to deciding whether to invest time in learning the game or trying to play it well. Many studies of game play have focused on optimality and expertise, characterizing how people and computational models play based on moderate to extensive search and after playing a game dozens (if not thousands or millions) of times. Here, we study how people reason about a range of simple but novel connect-n style board games. We ask people to judge how fair and how fun the games are from very little experience: just thinking about the game for a minute or so, before they have ever actually played with anyone else, and we propose a resource-limited model that captures their judgments using only a small number of partial game simulations and almost no lookahead search. For more information about this project, see https://sites.google.com/view/intuitive-game-theory

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